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Southwestern Meeting in Albuquerque November 8 to 10 (note change of date).
See page 416

PRESENTED BY
DR. A. S. WARTHIN.

SOUTHWESTERN MEDICINE

Volume XII. SEPTEMBER, 1928 No. 9

OFFICIAL ORGAN
OF THE
NEW MEXICO MEDICAL SOCIETY
ARIZONA STATE MEDICAL ASSOCIATION
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ANNUAL SUBSCRIPTION $2 SINGLE COPIES 25 CENTS

Entered at the Postoffice at Phoenix, Arizona, as second class matter.
"Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized March 1, 1921."

THE CANCER PROBLEM

JAMES F. PERCY, M. D.
Los Angeles, California

Oration on Surgery before the Arizona State Medical Association,—Thirty-seventh Annual Meeting, Tucson, Arizona, April 19th, 1928.

The practical phases of the problem of the treatment of cancer today should not be concerned with the elusive subject of the cause or source of the disease, but rather with the consideration of the methods that we already have for its most effective management. The general and almost unlimited pessimism of medical men and women relative to doing anything adequate in the treatment of the disease, is also a great factor in permitting its present unhindered mortality rate. Combined with this is the failure of both physicians and surgeons to recognize that there are several procedures available which are of unquestioned and also of preeminent value in its treatment. These two most potent factors constitute the largest element in what we conceive to be the cancer problem.

The determination of the cause of cancer can, therefore, well be left to those best qualified to unravel the mystery that surrounds it, while we proceed to discuss the more practical and hopeful phases at hand for its destruction as a very essential primary effort in its management.

I once inquired of a professor who held the chair of pathology in a German university, if any one would ever uncover the cause of cancer. For a moment he seemed lost in reverie, and then replied, somewhat after the manner of the oracle at Delphi—"He who first tells us the cause of cancer will be in a position to describe the anatomy of the human soul." This was in 1898, and to date his reply has not been improved upon or made obsolete by anything that has come to us from the ubiquitous field of cancer research. But suppose someone does reveal the basic factors in its causation; we have no guarantee that it will reconstruct the problem of its treatment, or make it either easier or more effective. Koch announced the findings of the bacillus of tuberculosis in 1882, but, aside from completing the demonstration of the infectiousness of the disease, nothing in its better treatment has resulted from his brilliant and epoch-making discovery. There is, I must re-emphasize, no disease so easy to put an end to, as early accessible cancer, by several recognized and well-known present day methods. My conception of the best of these measures will develop as we proceed. It is also well within the realm of probability that the means which we already have for the treatment of cancer will never be improved upon. This implies that we have, if we would but recognize and use them, everything needed for the successful handling of the condition.

Why then a cancer problem? In other words, what is back of the present pitiably obvious indifference and unconcern of both the medical profession and the public, relative to doing something worth while to both hinder and to destroy cancer? The answer is simple. First, the cold knife. This instrument has probably done more to discourage the victim of cancer and his surgeon from undertaking the early treatment of the disease than any other one factor. Glaring faults of technic when employing the cold knife, must also come in for a share of the resulting fear that this instrument has bred. For, in spite of its unquestioned value in rendering many cancer victims symptom-free for years and giving to unrecorded additional numbers a well-worth-while form of palliation, it has rarely been employed in a manner that keenly recognized this easy predisposition to both incite and spread cancer in the tissues. In this way, therefore, it has often been made to be the ideal vaccinator from and beyond every contaminated area or process that it invades, whether cancer, tuberculosis, actinomycosis, or osteomyelitis. The careful surgeon changes his scalpel after incising the skin, in opening the abdomen, for fear of carrying surface skin infections to the peritoneum. He likewise often deems it necessary to replace his

gloves before proceeding further, following the accidental invasion of an infected area. In addition, he has the sterile field renewed, and all of the sponges about which there is the slightest doubt, discarded. But not so in operating cancer. He keeps the same gloves, the identical knife and clamps and sponges, and continues to use them over and over again. Streptococci, et cetera, must be recognized, respected, and thwarted, but the much more venomous and hellish cancer process can be dismissed with a more perfunctory and reckless technic.

The unsatisfactory results following treatment with the cold knife in the late cases, have also had much to do with the proverbial delay upon the part of the patient in seeking early surgical relief. It is a vicious circle. The patient's primary dread of the knife is later substituted for the fear of his cancer, the successful treatment of which he sees no hope of accomplishing through the methods of present-day surgery.

When the medical profession succeed in educating themselves, as they finally will, regarding the, at present, little appreciated possibilities for good in cancer surgery, the public will soon learn of it, and a new day will have dawned in America in the surgery of cancer. This will gradually reverse the unfortunate attitude that now characterizes the course of its average victim, and will result in the prevention of much of the present suffering and the saving of lives that are now needlessly lost. The fear of the knife—instead of dismay at the appearance of cancer, (which would seem the logical thing)—the medical profession is doing but little to minimize either by precept or technic for those so afflicted. But when they have passed the primary stage of apathy regarding their growth, and reached the one of alarm and finally of terror at its malign progress, they are ready to accept almost anything that is offered in the way of treatment, no matter how extreme, desperate, or bizarre it may be. The exceptions to this rule in the late cases are so few, in my experience, that they can be ignored in this discussion of the cancer problem. If the cold knife is now employed in the usual stereotyped way, the ultimate results in the great majority of the patients so treated cannot fail to be far from satisfactory, and thus the present almost mass psychology resulting in horror and panic regarding the employment of the cold knife in the treatment of cancer, is perpetuated.

The late John Byrne of Brooklyn, New York, one of the first, if not the first, to condemn the undiscriminating use of the knife in cancer surgery, said in his Presidential address before the American Gynecological Association, in 1892—"That operative surgery in this particular phase of cancer (uterine) is in many respects more dangerous than the disease for which it is undertaken, and, as the majority of all patients afflicted would live longer without than with it, it is not a safe or a useful operation, and, as such, is unjustifiable."

The belief has gradually grown through the years that we are helpless in the presence of cancer. It has been handed down from the fathers, and seems to have assumed almost the proportions of a fetish. Now too many seem determined to continue to assume that this "belief" is true. As a result, we have lain down on its treatment, except in a futile sort of a way, and so have our patients.

A **second** important element in the present day cancer problem is the inadequate instruction given by medical schools in this country on diagnosis and treatment of cancer. I know of but one school where the subject is approached seriously and with an earnest effort to deal with it intelligently. In 1924 it was my privilege to pass upon the examination papers of two hundred and twenty-two prospective internes from forty-eight Class A American medical schools. The question was—"Give the treatment of cancer." The answers, as indices of what is being taught on cancer treatment in this country, were most illuminating in their ambiguity and perplexity, as to what could or should be done. It is practically true that there is no graduate school of medicine that actually, positively and rationally gives instruction in the management of this protean disease. The lack of what I consider to be fully adequate clinical instruction in the treatment of cancer, has become a critical situation in present-day medical teaching. With cynicism rampant and excessive at the fountain head, what else can we hope to find in the profession as a whole?

The **third** factor in the cancer problem concerns the psychology of the average victim of the disease. This is shown by his usual habit of concealment from every one until one or more of the terminal stages of his disease appear. This hiding of his pathology is sometimes carried to unbelievably mournful, and even fatal, lengths. In some it is so pronounced as to reasonably suggest that, with the development *pari passu* of the hidden malignancy, it does something to alter or upset the normal mental balance of its host.

The **fourth** problem in the cancer treatment situation is the one of the failure or at least the negligence of physicians and

surgeons to learn the correct application of the methods already at hand for the hopeful treatment of cancer. Another phase of this side of the problem is the misuse, or, equally as bad, the inadequate use, of the various procedures recognized as of value in its treatment.

To the writer, the four factors just enumerated constitute the reason and the explanation of the wellnigh chaotic, confounded and utterly confused cancer treatment situation today. Men, women, and children, the subjects of cancer, have no means of knowing that we have anything to offer them. And, when they do come, the situation is rarely fitly met. The friends are told, by inference at least, that little can be done except, possibly, by the cold knife or x-ray, and the patient, likewise, is too often given some indefinite and unconvincing advice that he instinctively feels means that he is being abundantly, but sympathetically, abandoned to a final exitus, usually by the insufficient and disappointing morphine route. And yet the greatest efforts in constructive cancer propaganda today are being expended to get the cancer individual to come early for treatment, and then we marvel at his failure to do so. "To come early"—but we might inquire parenthetically, "for what?" When the medical profession succeed in educating themselves regarding the possibilities of the most successful management of cancer, the public will soon learn the facts.

The chiefly effective methods at our command for the local eradication of cancer are some form of the actual cautery, the cold steel knife, caustic pastes, and radio-active agents. But rarely is any one, or any combination of these methods, employed in the most effective way possible for the benefit of the cancer afflicted patient.

The statement just made has a very wide application. Some of the best known institutions are doing work that is dreadfully inadequate because they have overlooked, or failed to grasp, important and essential facts in the technic of men who are more than doing "something" of permanent or even of temporary benefit for sufferers. It is also true that in some of the smaller cities there are practitioners who have grasped the essential and distinguishing parts of this better treatment. It follows, necessarily, that they are getting results that will inevitably have to be duplicated everywhere before the present all-but-universally-ineffective treatment of the disease is overcome. I know of no greater need than that a great central institute be established to serve as a teaching center for the scientific determination of the legitimate boundaries of all methods considered worthy of recognition in the treatment of cancer. Important functions of such a place, aside from the one of ultimately determining by actual experience the most hopeful type of treatment, would be the education on all worth-while cancer facts of both the profession and the public. When both of these great classes know as much about cancer as they do now about appendicitis, medicine, as a profession, will receive the recognition in the former that is now by common consent accorded it in the management of the latter. The older practitioners will well remember the verbal swordplay common in medical societies but a few years back on the question whether a patient with appendicitis should ever be operated. It will readily be seen, then, that we are now repeating with cancer our former experiences in appendicitis, and none of us will doubt, I am sure, that the final outcome will be the same: viz, an enlightened profession and public will co-operate to achieve the best results in cancer treatment. The great desideratum following the treatment of all malignant processes developing in a human being has always been to follow the patient to the termination of his trouble, whether that is health, ultimately, or death. If this could be done, the encouragements that now exist, i. e., that are a matter of record in the experience of not a few surgeons throughout the world, would become a matter of helpful common knowledge and reassurance for further effort.[1]

In this day the cancer problem is such a measureless subject that in an address, that very properly must be limited, one cannot hope to touch all of even its highest spots. I have just referred to "Encouragements" in cancer surgery. I should be happy to devote the rest of what I have to say to detailing experiences and relating the histories of patients that would make such a statement convincing and conclusive to the members of this Association. But it will probably render the balance of what I have to say of more immediate practical value if I mention something relative to certain of the underlying principles of cautery surgery in the treatment of cancer. It may, also, not be amiss to state that I have hundreds of patients alive and symptom-free following treatment of their malignant foci with the cautery, from two and one-half to twenty years ago. There is nothing so convincing as cured patients, in any physician's or surgeon's argument with his colleagues on the results of his work, and when the condition under consideration is cancer, it has additional claim on our interest. If what I have just said regarding results in cancer surgery

with the cautery were not susceptible of demonstration on living and well patients, I would not have spent the most active years of my professional life alone in its development. The best statistics so far available in the surgery of cancer with the cautery, are those published by the Doctors Scott', Senior and Junior, of Temple, Texas. It is our misfortune that neither of these master surgeons was able to keep the appointment to make this address, as was planned originally for Dr. Scott, Sr., by the program committee. But the sudden distressing and lamentable illness of Mrs. Scott, as your Secretary has told you, made his appearance here impossible. Had these men not been detained they would have emphasized anew that the most promising and hopeful treatment of cancer is to be found in irradiated heat from the cautery knife.

As a preliminary to sketching how best to destroy an accessible cancer in the human subject, I wish to call your attention to the steadily increasing mention in the literature of the world, which the treatment of cancer by heat is receiving. This has been particularly noticeable in the last year. Another impressive phase of the modern recognition of this ancient method, is the entirely new one of urging that the cautery treatment be applied at once to the very earliest manifestations of the disease.

This is, I repeat, something that has not been done previously in all the centuries of its employment in the treatment of cancer.

If the physicians who first see these patients would thoroughly destroy their growth with a hot iron, the neglected terminal-stage patients whom we so frequently meet, would not come to establish and fix in the public mind their too readily assumed belief that we are helpless in the presence of the patient suffering from this condition. What do I mean by thoroughly destroying cancer? One or the other of two procedures: either the application, directly to the visible growth, of an appropriately sized iron, i. e., one sufficiently large to cover the mass until it is completely and utterly melted out of existence; or, secondly, the finished and wide excision of every vestige of its visible or palpable manifestations with the hot knife. Why physicians and surgeons fail to destroy these small surface accumulations of cells with the cautery, when they first appear, is one of the enigmas of surgical practice. Why they permit them to grow unhindered into the vastly destructive and formidable seeping, bleeding, stinking, and later painful, disheartening and hellish abnormal tissue processes is, again, one of the inexplicable mysteries in the practice of both physicians and surgeons. In all the glorious realm of medicine and surgery, there is nothing so easy to cure permanently as early cancer, with a suitable degree of heat. If this could be done at once when the disease is first apparent, I repeat, the late cases would be limited almost entirely to internal cancer. If every physician who is consulted regarding its treatment would, in his first attempts with the cautery, limit his efforts to the destruction of the smaller masses, until he becomes familiar with the easily acquired technic of using it in the more advanced cases, he would never think of employing any other method. When he becomes conversant with its correct application, he will naturally enlarge the field for its legitimate employment.

The first requirement in destroying abnormal human tissues is a good cautery. My conception of such an instrument is one that will retain heat in the blade when passing through wet tissues for a considerable distance. The blade must not only feed the tissues the necessary destructive degree of heat continuously and steadily, but it must also be easily controlled. HEAT IS THE POISON THAT INVARIABLY KILLS CANCER. It is for this reason that the wire-like cautery blades found in the instrument shops and made from platinum, have but a limited field of usefulness. It is difficult to cut the tissues with this type of cautery without their bleeding and this is always evidence that the essential heat penetration is not being delivered. As a rule, these blades are either too hot or too cold, and, because of this, frequently damage important vessels before the surgeon realizes what has happened. In addition, their great cost is no recompense for their limited service. The equipment necessary to carry on cautery surgery is comparatively inexpensive, and does not require a large preliminary outlay in money.

In attacking surface cancer, it is well to make an outline on the skin with the hot knife preparatory to the excision of the abnormal structures. It is also important to cut the skin from within out. This permits the greater dissemination of heat within the tissues, which is always the essential factor in the destruction of cancer, and, in addition, the undercutting gives a better final union of the skin edges. A mass over one inch in diameter (2.5 cm.) should be cut out with the cautery knife. A smaller area can be melted down with a ball-tipped heating iron. The disadvantage of practising this latter procedure is that no further proof is obtainable as to the microscopic character of the growth. This may later become extremely important. A biopsy, therefore, done with the cautery knife should precede every de-

struction of a malignant mass. Small recurrences, likewise, must be obliterated at once. The patient should be taught to watch for and to recognize these while they are still minor affairs, and to report at once for their immediate eradication. He thus becomes a partner in the saving of his own life. It seems to be a clinical fact that many times this will finally whip out the last vestige of the disease, for the reason that surface cancer in many instances does not metastasize deeply until late.

The practice of asepsis in the cautery removal of a mass of cancer outside the abdomen, is of minor importance. My own view is that suppuration, especially if accompanied by an active degree of fever, plays an important part in inhibiting the redevelopment of cancer, both locally and as a metastatic process.

Prolonged anesthesia with ether or chloroform should be avoided. I believe that many of the comparatively quick returns of cancer in the operated field, especially following cold knife surgery, can be at least partially attributed to some occult influence of these agents on the patient's cancer protective mechanism. I am aware that many believe that no such process accompanies the development of the disease. It is this observed clinical data, however, which has caused me to employ, as frequently as possible, the hyoscine and morphine method of anesthesia combined with a minimum of ether. This latter agent, if required at all, is mainly useful while the cautery knife is incising the skin.

In closing, I want to say a word about cancer mortality following treatment with the cautery. We should always keep in mind that there are two classes of cancer patients. The one comes for treatment early, the other late. In the early case the problem is one only of the most hopeful method for getting the easiest, the best, and the most lasting final good result. We should also recognize that the late case is always and eternally a neglected early one. More than this, every cancer patient, early or late, if not effectively treated, dies a miserable death. In the early cases, a big percentage get well. In the late cases a large percentage die, but not all, and those who do not die, can often get a duration of relief or a form of palliation that is well worth while. To me, to refuse to make anything but a perfunctory attempt to benefit an otherwise terminal cancer patient is unworthy of us. No one has anything to lose, especially the patient. He has everything to gain, for it is impossible to make him worse. Cancer untreated, especially on the surface of the body, always produces a horror that no surgeon, no matter what his method, can duplicate. A patient suffering from cancer, submitted to the cautery technic, is never made worse. Cautery surgery leaves the patient practically without further suffering as far as pain is concerned. Cautery-operated surgical patients, including those where there has been an abdominal section, when the technic that I have developed is followed, rarely require any morphine. Cautery surgery is essentially and largely painless surgery, both during and following the operation. Relieved of the necessity for the employment of morphine or other sedative drugs, I rarely see post-operative acidosis following the employment of the cautery, even where there has been extensive dissection of living tissue.

My operative mortality is no greater than it would be in like cases if the cold steel knife were employed in place of the cautery. It is true that the repair of tissues following the application of the cautery is not as rapid as is that after the use of the cold knife. This is more than compensated for, however, by the greatly lessened chance of a subsequent local or distant recurrence.

A further word relative to my operative mortality may be of interest. The very complete records of the Los Angeles General Hospital show that, from June, 1926, to July 1st, 1927, this was 34⅝ per cent. It should also be noted that this record of operative results is based only on major cases. It is well known that I refuse practically no patient requiring the operative cautery method in advanced cancer. I have always done this, and I see no other way as far as determining final results are concerned in our present unenlightened state of what cancer really is.

My first paper on this disease, published in 1912, was on the "Cautery Treatment of **Inoperable** Pelvic Cancer." The minute that we begin to try and select and to treat or to operate only those we consider favorable for a given method, and to speciously exclude all the rest as hopeless, or to attempt to salve our consciences by classifying them as for palliation only, we are almost certain to condemn at least 20 per cent of those that we might otherwise benefit, to an unnecessary cancer death.

I have also never included minor degrees of cancer of the lips, ears, nose, eyelids, skin, tongue, and neck in my enumeration of statistical results. Even though these primarily small manifestations of the disease, when disregarded, furnish the major problems that we all see and treat, and of which I have stated I have an operative mortality of 34⅝ per cent. If I included these earliest and lesser manifestations as

part of my statistics, as is generally done, following the treatment of cancer, they would be boosted so favorably (for these practically all permanently recover) that those reading them would undoubtedly question their accuracy.

Another handicap in the successful cautery treatment of cancer is the almost universal lack of a trained hospital personnel sufficiently experienced to carry out intelligently and skilfully the post-operative care of major surgical patients. For, unfortunately, present-day hospital efficiency does not seem to contemplate effectual oversight of the supersurgical patient. If I could live with my patients, the present unnecessarily high primary mortality could be reduced to where it would easily correspond to that which obtains among skilled general surgeons everywhere. Under present conditions, many valuable lives are needlessly and uselessly sacrificed because, when the patients leave the operating room in good condition, as most of them do, they are immediately turned over to the management of inexperienced, untrained, and unsupervised fledglings in the science and art of medicine and surgery.

If I did not feel that these, at present, unfavorable conditions for the victim of advanced cancer would gradually improve, as a result of the general recognition now being accorded the cancer treatment question, all over the civilized world, I should feel less optimistic regarding our final triumph over this seemingly increasing menace to the race.

Cancer mortality will also be further reduced when every city capable of supporting it will have an institution devoted exclusively to the treatment of cancer. In such an organization men and women can be trained not only to employ, but to observe the final results of, the various hopeful methods that their enthusiastic chiefs believe in and follow. Those thus thoroughly trained would then become available for other institutions in the development of their cancer service along the lines that experience has shown gives the best results. Such an institution could appropriately have an impressive and stately approach and a most noble entrance over which, in letters of living light, should be inscribed for the benefit of the dispirited and disheartened cancer victim:

"He who enters here, gains Hope."

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THEORY, ETIOLOGY, SYMPTOMS AND TREATMENT OF FOOD SENSITIZATION

ORVILLE HARRY BROWN, M. D., Ph. D.
Phoenix, Arizona

(Read before the thirty-seventh Annual Meeting of the Arizona State Medical Association, held at Tucson, April 19-21, 1928.)

The theory I shall advance has helped to clarify, for me, the atmosphere of sensitization phenomena, explained observations on etiology and treatment and caused me to be more confident of my methods of therapy. The observations on etiology have a direct bearing on treatment and on prophylaxis. In presenting symptoms I shall attempt to add a new observation or two and to throw out hints for future investigation. The treatment has helped me to get results in a considerable group of cases which had hitherto been difficult, if not baffling, to me.

For the basis of my theory I give credit to the splendid works of Vaughan (Protein Split Products) and Gurd (Infection, Immunity and Inflammation) and the authors they quote.

My theory is as follows: The protein molecule, whole, or at the end of first stage gastrointestinal digestion for reasons to be discussed later, reaches the lymph, blood and tissues. For the whole protein an enzyme, which we may designate P, is developed to split the molecule to a stage in which a part is toxic; these split products may be the haptophor and toxophor groups of Vaughan or comparable to them. The task which enzyme P has to do is simple and easily performed. The haptophor group is nontoxic and may be ignored.

For splitting the toxic portion (which we may designate the toxophor) to simpler nontoxic compounds, there is developed an enzyme T which has a complex and difficult task. A number of reasons suggest themselves why the task for enzyme T is difficult. It may be that there are two or more molecules of the toxophor group for each molecule of whole protein. This would demand twice, or more, the amount of T to keep pace in its digestion work with that of P. Vaughan has suggested that such is the case. It may be, also, that in addition to this, the task for T for each molecule requires less time than the corresponding task for P requires. Then, too, there is the further possibility that the toxophor group, be-

ing toxins, have an antibody action with enzyme T in which the enzyme and toxin combine. Again the toxophor group, or a comparable stage of partly digested protein, may be absorbed directly from the alimentary tract into the tissues. Enzyme P may be the same for various whole proteins whereas T may have to be specific for each toxophor group. The fact that persons are sensitized to foods which they have never eaten is indicative that P is the same for various whole proteins. Any or all of these possibilities may occur to cause enzyme T to be behind enzyme P in digesting protein which gets into the tissues before being properly prepared for assimilation. There must yet be other explanations as these do not elucidate all of the facts, particularly of pure allergy and anaphylaxis.

I follow Vaughan in using the term sensitization to include both allergy and anaphylaxis. Gurd, wisely, it seems to me, applies allergy to the local reactions and anaphylaxis to the general, both of which appear to be modified quick types of inflammation plus toxin effects.

In the light of the theory advanced, then, the cause of sensitization in a person is the filling up of the tissues with whole and partially-digested protein so that enzyme T gets far behind enzyme P in the destruction of the molecules of protein. It is common observation that the foods to which a person is sensitized are commonly those of which he eats most heartily and frequently.

An inference which naturally follows is that the converse should also be true, to-wit: If the proteins to which a person is sensitized can be kept from reaching the tissues until all proteins and split proteins are completely disposed of and enzyme T is entirely freed from the chemicals it has been concerned with, and the whole or partially digested proteins can be prevented from again reaching the tissues in too great quantities, the sensitization phenomena should be no longer in evidence. In other words, desensitization should have been accomplished. I have proven to my own satisfaction that such actually occurs. Examples of desensitization will be given in the paragraphs discussing treatment.

If, in sensitization, the two enzymes do exist according to the theory and T is overwhelmed so that the split protein molecules supplied by P remain in the tissues to exert their harmful effects, it would seem that P might also be overwhelmed so that the whole protein of the food in question might be introduced into the tissues and not undergo digestion by P with sufficient rapidity to produce allergic reactions. I have had at least one undoubted example of this. It is not easy to find cases without confusing complications, on which such tests can be conducted. Asthmatics so commonly use adrenalin or ephedrine, which may mask the results of the skin tests. Then, too, it is often not possible in the early stage of the treatment and testing of a case to be sure of a protein with which a person's tissues are surcharged. My one clear-cut example of this phenomenon was a baker who worked intimately with wheat and who ate it freely. He had an extremely severe case of dermatitis. His test for wheat, made when he was first seen, was negative. I felt certain, however, that wheat must be his primary and main sensitizer and at once had it and everything else, except two or three articles which he had not been accustomed to eating and which were undoubtedly negative in the tests, eliminated from his diet. His improvement was promptly evident and with his improvement there was a relative increase in the severity of the reaction of the wheat test on his skin. I have had other cases in which it seemed that enzyme P could have more protein supplied to it than could be promptly digested by it.

If whole proteins are so closely allied chemically that enzyme P for one may split others to the toxophor stage, it would seem that, when enzyme P is developed for one protein, the tissues might be easily stimulated to develop another enzyme P, perhaps closely allied to the first P produced. In this way may we account for the readiness with which many persons develop multiple sensitizations? It is common knowledge that multiple sensitizations are the rule.

Sensitization may exist to foods eaten in relatively small amounts. Pepper, for example, is never eaten in quantities comparable to wheat or eggs or many of the ordinary articles of diet. It may be, too, that enzyme P for pepper is unlike that for any other protein to which the person is sensitized. In such instances the explanation may be that the protein is relatively difficult for alimentary digestion and hence may be predisposed to absorption in whole or a partly digested state. An analysis of my records, I believe, will show a preponderance of food sensitizations to be against those which have a high cellulose content and which are commonly eaten in raw states. Unbroken cellulose material in a food inhibits alimentary digestion and would be expected to predispose to an absorption of protein, before undergoing complete digestion.

Many factors tend to make inadequate alimentary digestion. Among them may be mentioned: Hurried eating, nervousness,

poor mastication, infection, over eating, hypo-and a-chlorhydria, and perhaps undercooked and poorly prepared foods and inadequate amounts of the digestive ferments.

Hurried eating I believe to be extremely important as a cause of sensitization. I cite an example as follows: A physician who had been subject periodically, for several years, to mild pruritus of his hands and feet after eating cucumbers or pepper but who had never had trouble from milk, though he had used it regularly, drank a glass in as few swallows as possible, with no other food at the time, and within an hour or two developed pruritus of the hands and feet.

Poor mastication is certainly a cause of inadequate digestion. I have had a number of cases who developed asthma or had marked exacerbations after extractions of all of the teeth. Sensitization cases commonly have few or no teeth, missing teeth, inadequate bridges, poorly fitting plates or bridges, faulty occlusion, pyorrhea, tender gums, etc., which admit of but poor mastication.

The evidence that nervousness interferes with digestion is undisputed. Food sensitization cases are prone to be uneasy about eating this or that food or even almost any food and, hence, are not in states to digest foods they may eat. Neither are these people exempt from other forms of nervousness.

Over eating is regarded, by many asthmatics particularly, as an important cause of their dyspnea. They complain of flatulence and stuffiness in both the abdomen and the chest, and are conscious that they digest small or moderate amounts of food much better than large amounts.

Infections, especially colds, have notoriously been predisposing factors in the development of sensitization phenomena. Just the part they play has been questionable except in the minds of those affected. Histories are difficult to interpret on this point. I had one case in whom the evidence and findings were conclusive in showing that infection may be a prominent factor in tending to sensitization. A young man had the influenza during the 1918-19 epidemic. He was seriously ill for several weeks with fever and the usual symptoms. This illness graded into asthma from which he suffered periodically for five years. I found him sensitized to about eight foods and not to bacteria or other proteins. The chief offender was buckwheat. Even the intradermal test for this protein gave him marked lymphangitis, hives and, finally, after twelve hours, violent asthma. He had been accustomed, he then recalled, for a number of years before the influenza attack, to have buckwheat cakes for breakfast at intervals of perhaps two to three weeks. The conclusion seems warranted that the influenza infection depressed his digestive powers sufficiently to allow the absorption of buckwheat, and other whole or partly digested protein, to such an extent as to overwhelm enzyme for these proteins. I have now had sufficient experiences with the administration of stomach digestants during colds to say that colds do depress the digestive powers and predispose to sensitization phenomena. More will be said of this under treatment.

Hypochlorhydria is a potent cause of inadequate stomach digestion. I have found a considerable percentage of sensitization cases to have hypochlorhydria—in a few cases near achlorhydria—after the Ewald test breakfast. I give credit to Dr. Charles H. Eyermann for priority in making a series of fractional stomach tests on asthmatics and calling my attention thereto. Administering hydrochloric acid, I have found, has definite value in a notable percentage of sensitization cases, as will be discussed under treatment. I have no data on reduction of the pepsin of the stomach secretions. I have wondered if the tendency to eat less of the rich protein foods than formerly has any bearing on the etiology of hypochlorhydria, or if cold drinks and foods might be a factor in causing it.

Inadequate pancreatic ferments, in the opinion of Sansum, may cause slow digestion and lead to sensitization. He has treated several cases by giving tablets of pancreatin coated to resist stomach digestion, with good results.

Just what the effect of hyper-or hypomotility of the stomach or intestines might be, or of constipation, is problematical.

The direct etiology of food sensitization, then, apparently lies to a great extent in the causes of inadequate alimentary digestion.

If one sensitization leads to another, then theoretically, and on the basis of Vaughan's work, one might have his first senstization from pollen, or from bacterial protein, or from animal dermal scales and be predisposed thereby to develop food sensitization just as one food sensitization leads to another. I have the feeling that infection of various types, particularly if chronic, has a definite bearing on the development of sensitization.

The symptoms of sensitization depend upon the organ or tissues affected. The chances are that we are far from recognizing all the variety and number of conditions directly due to foods. Duke has said that fifteen per cent of the population suffer from sensitizations. I suspect that his figures are too

low. The danger of finding sensitization where it does not exist is slight as compared with the danger of overlooking it. If inflammation is really a part of sensitization, as Gurd and Vaughan believe, we must alter our concepts to a considerable extent; on the basis of the theories which I have presented, the change in our concepts will not have to be as radical as would at first be assumed. The food proteins upon the skin often produce marked typical inflammatory changes which may endure for days and the hives preceding the inflammation may be inconsequential. The inflammation following pollen, dermal scales, bacterial vaccines and other protein tests may also be marked. Gurd is of the opinion that the correct vaccine for any given case should be selected according to its skin reaction.

Food sensitizations may be suspected from the statements made by the patients. About as often as not, however, patients fail to blame foods even when foods are definitely at fault. It is well to test for food sensitization, irrespective of the type of the symptoms, whenever the symptoms are out of proportion to the discoverable pathology.

Among the types of sensitization from food which I think I have found, are: asthma, dermatitis, pruritus, hives, pharyngitis, bronchitis, migraine, general nervous system depression, cystitis, flatulence, rheumatism, rhinitis and neuritis. I wish to make the suggestion that neuralgia, perchance trigeminal, psoriasis, certain cases of cardiac irregularities and certain cases of hypertension, may be due to food sensitization. William Lintz also has suggested that hypertension may be a sensitization phenomenon.

So far as I know, no one else has suggested that flatulence is the result of food sensitization. The observation would seem to be of great importance, as treatment in line with the theory advanced ordinarily gives brilliant results. Flatulence is a condition of which many cases of one sort or another complain with considerable emphasis. Their common term for it is "gas." I am convinced, from the way the patients complain of it, that at times it must be very annoying. One intelligent patient assured me that she had a great deal of "gas" after almost any food but especially after certain foods. On making the protein skin tests for foods I found that those which she said gave her the most "gas" produced definite and sometimes marked skin reactions. The skin tests made intradermally, even, seemed to cause "gas" in her alimentary canal. It would be expected that the digestants given with the food would be a specific for the flatulence and, in a number of cases, I have found such to be the case.

I have had one case with rheumatic or rheumatoid pains which came from certain foods; at any rate, the withdrawal of the food in question caused a prompt relief of the condition.

In my records are several examples of neuritis thought to be the result of sensitization. These cases have not responded to the usual treatment of withdrawal, as have other cases of sensitization phenomena, and suspicion exists in my mind that I may be wrongly interpreting the cause of the neuritis, at least in instances. I have had one case simulating trigeminal neuralgia and migraine which had strong indications of being a sensitization phenomenon. The administration of digestants has brought about definite improvement in the case.

I have reported elsewhere one bladder sensitization to food which was cured by withdrawal of the offending foods. I have had two other cases which apparently belonged in the same class but about which there remains doubt.

I have had several cases who have had stuporous attacks associated with asthma, which undoubtedly came from foods.

At least two cases with cardiac irregularities were believed to come from sensitization—to food proteins in one case and to bacterial proteins in the other.

Dermatitis and hives are well recognized as sensitization phenomena. Pruritus is perhaps not so well established as from the same cause. I have seen a number of cases in which pruritus was definitely the result of eating certain foods. In several instances the pruritus preceded inflammation of the skin.

Pharyngitis as the result of food sensitization, it would seem, should be no novelty. I found one extremely severe case in which the cough was maddening and everything but adrenalin or ephedrine had been tried for months with absolutely no relief. After one dose of adrenalin followed up with ephedrine and a digestant mixture there was no more coughing. I have thought, since, of numerous cases which I have treated in the past which might have been analogous to this.

Bronchitis without asthma, or even dyspnea, should be fairly common. Whenever there are bronchitis findings, sensitization to foods should be held in mind.

Rhinitis, especially of the vasomotor type, is most commonly due to pollen. It must not be forgotten that it may be due purely to food and also that hay-fever can be complicated with food sensitization rhinitis. I have found that a surprisingly large number of hay-fever patients are benefited by administration of a digestant mixture with

meals. The thought has come to me, too, that perchance a part of the pollen which causes hay-fever reaches the system by way of the gastrointestinal tract.

At least four cases of psoriasis have been encountered in definitely food-sensitization cases. In one case, spots of psoriasis appeared at the sites of a number of the intradermal tests for the foods.

Hypertension has been met with, by me, in a number of sensitization cases and the suggestion is offered that sensitization may play a part, at least, in its etiology. It seems rational that the blood vessels might be narrowed by changes in their walls analogous to those changes in the bronchi in asthma. While treatment in a limited number of cases has, so far, been encouraging, I can add nothing more.

The diagnosis of food sensitizations, particularly of severe types, in the light of the theory I advance, should be as thorough as is possible. The intradermal method, being the more delicate, is the method of choice. The reading of the reactions should be close and include the hives and the subsequent inflammatory areas for as long as they endure. I measure and record them in millimeters. Any reaction above ten millimeters calls for an elimination of the food causing it, from the diet, until later tests for that food are negative. Whether the aids to digestion will allow the mildly reacting foods to be continued in the diet and yet have desensitization of those foods to result, is a question which I have not answered. Theoretically such should be the case.

It must be kept in mind that foods which produce sensitization phenomena may not give positive reactions even when the tests are applied intradermally. In such instances, the food addition method, which I reported at the San Francisco meeting of this society, may be of assistance in locating the offenders. This method consists in having a limited number of foods in the diet for a time and observing their effects. Changes in the diet are made until a diet is found which causes little or no trouble; then one food at a time is added and its effect is observed. It is necessary to remember that foods have delayed reactions and may not produce untoward results for hours after being eaten.

In mild sensitizations it may not be necessary to make the skin tests. Administration of the digestant may suffice, after a short time, in effecting a cure, especially if the digestant is continued for a considerable period.

The treatment of sensitization cases should aim at ultimate complete desensitization. The first object should be to make the patient reasonably comfortable so that the investigations that are indicated may be made with deliberation under as few confusing conditions as possible. It may or may not be feasible to make early tests of the patient's stomach digestion. In the aged and in young children it is usually advisable to empirically supply digestants unless there are definite contraindications. In those who are tested and found to have hypochlorhydria the hydrochloric acid alone, or in combination with pepsin and perhaps with calcium iodide, should be given. The prescription which I have been using is as follows: Calcium iodide, four drams; dilute hydrochloric acid, four ounces; and quantity sufficient of elixir lactated pepsin to make eight ounces. I am not satisfied of the advantage of either the pepsin or the calcium iodide in the digestant mixture. In a group of cases, I have used the hydrochloric acid by itself and am not sure but what the results are equally as good as where pepsin and calcium iodide are used with the hydrochloric acid. In other instances, I have combined small amounts of ephedrine with the hydrochloric acid. In still other cases, I have used the ephedrine only as indicated by the symptoms and the dilute hydrochloric acid with meals, and am inclined to think this is the preferable procedure. The calcium was added to the mixture because Lintz has claimed such splendid results with it and, further, because calcium has been almost universally advised in these conditions.

When results are not obtained by means of the digestant, the skin tests must be made and all reactors, or at least the severe ones, eliminated from the diet. It goes without saying that it may be necessary to ascertain if there are sensitizations to pollen, dermal, bacterial or other proteins, which may have to be taken into consideration.

My idea that digestants might be of value in the treatment of sensitization phenomena dates back a number of years, but did not crystallize into application until I met a man, about eighteen months ago, who told me that he always carried a vial of hydrochloric acid and pepsin in his pocket to use whenever he unwittingly ate egg. Asthma resulted, in him, from egg unless he also took the digestant. A chemist for a mine in Cripple Creek had given him the mixture formula which he found worked successfully.

The first case treated by me with the administration of hydrochloric acid and pepsin was a child who had extremely severe asthma which I suspected, from the history, of coming from food. This case is an example of the empirical use of the digestant. The child was about six—too young for

stomach testing with the Ewald breakfast. Within about a week the child was entirely free of signs of asthma; then one evening the mother gave the child a bread and milk supper with strawberry jam, giving also, she said, the digestant mixture. Before morning the child was in a frightfully severe attack of asthma. The mother was then instructed to keep the child on the general diet she had been using and the digestant, and to bring the child to the office as soon as he was over all signs of asthma. Three tests for milk, six for wheat and one for strawberry were applied. All the milk, and all the wheat tests, reacted severely. The strawberry was negative. The conclusion seemed warranted that the child's natural digestive powers were inadequate to digest the bread and milk and possibly other offending foods in the amounts ordinarily present in his general diet. Even with the aid of the hydrochloric acid and pepsin he was unable to digest a full meal of bread and milk so that the whole or partially split protein would not reach the tissues. Other cases might be presented to substantiate this conclusion.

The sensitizations of children are likely to be from food and they often do well on the digestant mixture without its being necessary to make the skin tests. It is often advisable to eliminate from the diet, for a time, those foods which the histories of the cases disclose are probably the offending foods. The foods which the children like the best and eat in greatest quantities are the probable causes of the sensitizations. This fits in with my theory and seems to work out practically.

Certain persons have asthma only when they have colds. In these cases the digestant may need to be given only during the period of the colds. I believe, however, that it is wise to keep up the mixture in the interims, at least for a while. I have found that, even in the periods when there seem to be no signs of asthma, careful examination, especially with a number of forceful exhalations, will disclose mild asthmatic rales. The conclusion is obvious that there are slight results of sensitization even without the presence of colds. My interpretation of such cases is that the colds depress the, at best, poor digestive processes to a point which admits of whole or partially digested protein reaching the mucous membrane for absorption in amounts to cause a "blow-up."

I have had one case who had normal amounts of hydrochloric acid with the Ewald breakfast and whose asthma was cured by administration of the digestant, without eliminating the offending foods from his diet. Such instances are rare for the reason that most food sensitization cases have hypochlorhydria.

Flatulence, milk dermatitis, hives, pruritus and other mild food sensitizations, usually respond with reasonable promptness, according to my experience, to an administration for a short time of the digestants. My experience with the unusual types of food sensitizations is as yet too meagre to warrant any statement as to the influence of the administration of digestants upon them.

Sensitization cases should all be instructed to have as varied a diet as possible, to eat slowly, to masticate every bite thoroughly and to keep in a cheerful frame of mind, especially when eating, to have regular stated hours for meals and to have all infectious processes treated seriously in the incipiency. The dentist should be called upon to make thorough mastication possible. The entire family of each case should be instructed by the physician to lend support to the program for the patient. This paragraph also applies to prophylaxis of sensitizations.

The suggestion also arises that digestants might be given in cases of infectious processes for I have had enough results now to make me certain that desensitization results in cases where all offending foods are eliminated from the diet sufficient lengths of time. In hives and mild early sensitizations, a week to ten days of strict elimination may suffice to allow the patient to return to a regular diet with safety. The chances are, in my opinion, that desensitization is usually not complete in this time. In the severe cases desensitization may require months of elimination of all offending foods. Skin tests have proven to me that desensitization does result, much as would be expected from a study of the theory presented.

SUMMARY

A theory is advanced to the effect that there are two enzymes developed when whole protein reaches the tissues; P splits the whole protein to the haptophor and toxophor, or comparable, stages and T splits the toxophor portions of the molecule. If the toxophor group is not destroyed as rapidly as it is formed, sensitization phenomena are produced which may be typically allergic, anaphylactic or inflammatory. The task for enzyme P is simple, whereas that for T is difficult. A number of reasons are advanced to explain why the task for enzyme T may be harder than that for P.

Evidence is presented that bacterial inflammation may be responsible for the development of food sensitizations. One sensitization leads to another so that multiple sensitization is the rule. An important

cause of food sensitization is inadequate digestion in the stomach and, possibly, in the upper intestinal tract.

Among the phenomena which may result from food sensitization are: asthma, dermatitis, pruritus, hives, pharyngitis, hay-fever, flatulence, cystitis, rheumatism, neuritis, migraine, neuralgia, general nervous system depression and, possibly, psoriasis, cardiac irregularities and hypertension.

Treatment by giving a digestant produces splendid results, especially in the mild and early cases of food sensitization. In serious cases and those which do not respond to the digestant, careful testing by the intradermal method, one food protein at a time, of all possible offenders should be done and all marked reacters, at least, eliminated.

Desensitization results, at least in portion, of the cases when all offenders are eliminated a sufficient length of time. On the basis of the theory presented, desensitization should result in all cases if the elimination is thorough and protracted enough. In mild cases a few days or a few weeks of elimination of the offenders will suffice, but in aggravated cases the elimination may have to be for months or even longer. The prescription which I have used, in the main, as a digestant consists of four drams of calcium iodide, four drams of dilute hydrochloric acid and enough elixir lactated pepsin to make eight ounces. For a full meal two drams are advised, taken in a full glass of water or fruit ade sipped slowly with the food. A smaller meal may have proportionately less of the digestant mixture.

The diet should be as varied as possible. Over-eating, especially of any one food, is to be avoided. Thorough mastication, slow eating and best possible mental state are extremely important.

It is an excess of protein in blood and tissues which leads to sensitization; hence, avoiding excess of any article is the best prophylaxis.

INJURIES TO ABDOMINAL VISCERA

HILARY D. KETCHERSIDE, M. D.
Yuma, Arizona.

(Read before the Thirty-seventh Annual Meeting of the Arizona State Medical Association, held at Tucson, Arizona, April 19 to 21, 1928.)

I shall limit the scope of this paper to injuries without external wound. In studying this type of injury, I was greatly impressed with the difficulty in making a proper diagnosis, and, in view of the increasing frequency of these injuries and the importance of an early diagnosis, I felt a review of the subject might be of value.

These injuries are usually produced by blows upon the abdomen, and the small amount of force required to produce severe injury is sometimes surprising. On the other hand, I have seen cases where the wheel of an automobile passed directly across the abdomen without producing internal injury. The condition of the abdominal muscles, whether relaxed or contracted, and the condition of the stomach and bladder, whether filled or empty, seems to make a very great difference.

SIGNS AND SYMPTOMS

While there is apparently a definite train of symptoms, it is often extremely difficult, if not impossible, to differentiate a simple contusion of the abdominal wall from severe internal injury, as the same symptoms may be present in either condition.

Shock to some extent is present in all cases but may be slight or of only short duration and may also be present in simple contusions, so is not a very reliable sign unless persistent.

Pain, if persistent or localized, is a valuable sign, especially if it is increased by motion, pressure or deep breathing.

Rigidity is the most reliable of all signs and, if persistent or progressive, is almost pathognomonic.

Hemorrhage is indicated by pallor, thirst, rapid pulse and lowered blood pressure, but even in severe injuries there may not be sufficient hemorrhage to produce these signs.

Blood in vomitus, stools, or urine is a valuable sign when present.

The other signs, such as tympanitis, obliteration of liver dulness and respiratory changes, are of little value.

Unless there are signs of hemorrhage or blood in vomitus, stools, or urine, it is usually necessary to keep the patient under observation for a few hours.

TREATMENT

The mortality rate is higher than in injury from penetrating wounds, which is explained only by a lack of early diagnosis or a tendency to follow the expectant treatment too long. Early exploratory laparotomy is the only sane treatment. Early operation does not mean immediate operation in all cases. Often a delay of five or six hours is advisable. If a patient is in shock, a little time to rally will improve his chances and a patient who will not react from the shock of his original injury will certainly not withstand the additional shock of operation.

I believe that, for a few hours following visceral injury, peristalsis is stopped and that, even though a hollow viscus has perforated, there is very little additional soiling during the first few hours; therefore, a delay of three or four hours may improve the chances of recovery.

CASES

Elizabeth, five years old, was struck by fender of a slowly moving automobile. She showed no external signs of injury and parents insisted "she just had her breath knocked out." She was pale, and had increased thirst, rapid pulse, and was cold. We delayed operation about six hours. On opening the abdomen we found it filled with blood. The spleen was ruptured, torn from its pedicle, and floating free in the abdomen. The liver was ruptured. There was an hematoma in stomach wall and blood in intestines. She had made an uneventful recovery and was discharged from hospital in twenty-one days.

Jose, five years old, was run over by automobile, the wheel passing directly across his abdomen. The skin on the abdomen showed red mark of the tire tread. He showed slight shock and his abdomen was rigid and tender. We decided to delay operation a few hours. In a few hours the tenderness, rigidity and shock had so completely subsided that operation was never done. He was discharged on the third day.

DISCUSSION

DR. H. T. SOUTHWORTH, Prescott, Ariz., (opening): I can recall three cases of the class spoken of. The first was a man who was kicked in the abdomen by a mule. He had absolutely no mark on the skin, no redness whatever, and I think the fact he did not have some such sign is the chief reason he died from peritonitis. This patient argued like a lot of people who believe that if you can move the fingers there is no fracture of the arms; he said that there was no internal injury because there was no mark on the skin and the consultant agreed with the patient and asked for more time, and during that time he developed peritonitis.

The second case was a man who had a dump wagon run over him. He had absolutely no mark but was operated, ruptured viscus found, and he recovered very promptly.

The third case was a fairly recent one, in which I was consultant. A man was opening a gate which closed by weight and chain. When the gate swung shut, the man got his foot caught in the chain and fell over the stake to which chain was attached. He first fainted and then had acute pain; was taken into the house and vomited, but did not call the physician for about ten hours. The man lived thirty miles out and by the time he came in, he was in bad shape. He died. There was no mark on the abdomen.

In each of these cases, some viscus was ruptured. The disappointing features that Dr. Ketcherside mentioned were present. When you have these cases, you should decide that it is a surgical belly without trying to decide whether it is liver, spleen, or some hollow viscus, proceed to get in, repair the damage and get out.

DR. V. A. SMELKER, Nogales, Ariz.: I have seen a few of these cases. In the case of one man who was injured in an auto wreck, I was called in consultation on the second day. Man was passing blood and there was a large hematoma or swelling over the area of the left kidney. X-ray showed three ribs broken on the left side, but there were no external injuries. We concluded the left kidney should be removed and did remove it; the kidney was badly lacerated and patient was very weak, but rallied. Blood continued to come from the bladder and on the fifth day after operation patient died of uremia. No doubt, there was a double subcutaneous rupture of both kidneys. This case should demonstrate that kidney diagnosis is never accurate without definite kidney study. However, in this case we did not suspect anything wrong with the right kidney; there was no tenderness or swelling on that side and the blow was on the left side. The right kidney area showed no traumatism whatever and the patient never complained of the right side.

The second case was that of a little boy who was kicked by a horse. We made a diagnosis of internal hemorrhage. The left flank was filled with fluid and we opened there. The spleen showed numerous shallow lacerations. The hemorrhage had stopped and we proceeded contrary to the usual surgical procedure, which would have been to remove the spleen. We left the spleen in and packed thoroughly, leaving the pack in for eight days, and the boy recovered.

The third case is the only case I have ever had with ruptured pancreas. A man was held up by bandits in Mexico three weeks before, and beaten. Had a large tumor in the upper abdomen, chiefly fluid, about the size of a large grape fruit. There was no free fluid in the abdomen; stomach was pushed forward with tumor mass behind it. We opened the peritoneal cavity and found a large amount of brownish bloody fluid and, on lifting the transverse colon, we could see, through the posterior peritoneum, hemorrhagic areas over the pancreas. We opened the cavity and the man recovered.

With regard to the kidney case, both Dr. Bliss, who assisted me in that case, and I looked through all our available literature, and did not find reported any case of double kidney rupture.

DR. J. M. GREER, Phoenix, Ariz.: This paper of Dr. Ketcherside's is very timely. The things that can happen in the abdomen without external injury are certainly very interesting. Without opportunity to refer to case histories, I can recall three instances of such injuries.

One was an auto accident in which a man, weighing about two hundred pounds, going very slowly, turned over on a soft shoulder of dirt; he tried to jump out and bent over the door, which did not come open. He entered the hospital in great shock. On opening the abdominal cavity, we found a rupture of the transverse colon clear into the mesentery, without a sign of external injury.

The second case was that of a young man who was hit by a discus in a field meet. There was no evidence of external injury, but he grew gradually worse and died. On autopsy, the liver was found to be ruptured.

The third case was that of a mine worker who was struck over the abdomen. He had a rigid abdomen and we recommended operation, which was refused. He left the hospital and, about five days later, developed general peritonitis and died, as told me by another practitioner.

If we can ever get Dr. Sweek's abdominoscope perfected so that we can look in and see what is going on, it will be a great help.

DR. W. O. SWEEK, Phoenix, Ariz.: I have one of these cases. He was a Jap, 35 years old, who was riding a bicycle along the street when he was struck head-on by an auto. The tibia and fibula of each leg were broken and he was struck by the auto lamp over the abdomen. He was taken to the hospital by the man who hit him. The patient did not make much complaint about the belly, though there was rigidity, and I wanted to open the abdomen and see what was wrong. As I was young and inexperienced, the man who struck him wanted his own doctor and would not allow the operation. We waited twenty-four hours and by this time general peritonitis was evident. A midline incision was made and several perforations of the small bowel were found. Much feces was washed out and strip rubber put in as drains. However, the man died.

With regard to Dr. Greer's remark about the abdominoscope. I have had two patients who I thought might have something in the belly, and I

poked the abdominoscope in and tried to find something; I did not find anything, but will keep on poking it in. It does not do the patient damage and is useful in such conditions as tubal pregnancy and such injuries as these.

DR. J. A. KETCHERSIDE, Yuma (closing): When I spoke of delay, I did not mean twenty-four or thirty-six hours. If it is obvious that a man is injured inside, there is no need for any delay, unless he is in shock. I believe the majority of such cases are borderline, and we do not know whether they have internal injury or not; fully fifty per cent turn out not to have. I had a man, just before leaving home, with every symptom of internal injury along with broken ribs; abdomen was rigid, etc. After a few hours it all cleared up and proved to be irritation from the broken ribs. We see a lot of cases who have rigidity for a few hours. I just wanted to know how to diagnose these cases without waiting, but no one has told me how to do it.

SOME REMARKS ON FRACTURES

J. M. GREER, M. D.,
Phoenix, Arizona

(Read before the thirty-seventh Annual Meeting of the Arizona State Medical Association, at Tucson, Arizona, April 19 to 21, 1928.)

In presenting this paper I do not claim anything original. I do not expect to convey any great or special message on the subject. If this paper will stimulate more interest in the subject of fractures; if it will stimulate some discussion on the subject of fractures—particularly along the line of the period of disability of individuals who have sustained fractures—if it will stimulate the members of our profession within my hearing to more careful thinking on the subject of fractures, I shall consider that my efforts in presenting this paper will have been worth while.

As Dr. Scudder of Boston said, before the section of Orthopedic Surgery of the American Association, at Washington, D. C., 1927: "The treatment of fractures is today the most important subject in surgery, without any exception. It is important for three reasons:

"1. The severity of the injury to the whole individual in a case of fracture.

"2. The need for developing a sane judgment and deciding at the outset on a line of treatment suitable to each case and the treatment to be carried through to the conclusion of the case.

"3. The generally unsatisfactory ideas of treatment prevalent throughout our profession.

"The loss to industry alone from poorly treated and maltreated fractures is estimated at millions of dollars annually."

As you all know, it is generally thought, among surgeons, that the treatment of fracture is very unsatisfactory and many surgeons would rather not treat them at all. They just treat them because they cannot very well avoid doing so.

About 1922, a representative group of surgeons tried to prepare an outline with the aim of simplifying and standardizing the treatment of the more common fractures. This has been adopted by the American Surgical Association. It might be well for us to consider briefly this outline:

I. First-aid treatment. Avoid causing any additional injury.

1. "Splint 'em where they lie."
2. Avoid any unnecessary manipulation.
3. Transport with extreme care.
4. Treat any existing shock.

II. Examination. As complete and thorough an examination as possible, without causing any additional injury, should be made.

1. Begin with painless procedures.
2. Search for crepitus and abnormal mobility only when these symptoms are absolutely essential. The manipulation required to solicit them causes additional injuries.
3. Rule out, if possible, other associated injuries, especially of nerves.
4. Elicit objective symptoms, which will be painful, only under anesthesia.
5. Roentgen-ray examination should be made as early as possible. Roentgenograms should be taken in two planes, stereoscopic when necessary; they should be of sufficient size to cover the injured area and should be studied with extreme care.

III. Diagnosis. The simple diagnosis that a fracture exists is not sufficient. All details of pathology of the soft parts, as well as of the bone, should be considered, so as to visualize properly the problem of obtaining and maintaining reduction, as well as the problem of repair and its probable duration.

IV. Treatment. Each fracture should be considered an individual problem, and the treatment should be directed upon, not only the injury to the bone, but that of the soft parts, as well. The pathological changes following a fracture interfere markedly with the ease of reduction of displaced fragments, and, of course, influence the period of disability. These changes begin very soon after injury. Infiltration of the adjacent soft parts, coagulation and later organization of the blood clots, are the most important.

OBTAINING REDUCTION

Reduction of any existing displacement should be made as soon after the injury as possible. Do not wait until the "swelling goes down," as was the custom of many surgeons not so long ago. Do not even wait too long for x-ray examination.

Reduction should be as gentle as possible, and as complete as the individual case re-

quires. It may be controlled by fluoroscopic examination in appropriate cases, and should be checked by roentgen-ray examination as soon as practical. Manipulation should be carried out under an anesthetic, with but few exceptions. If complete or satisfactory reduction is not attained at the first attempt, further attempts at reduction should be made as soon as the need is recognized.

MAINTAINING REDUCTION

Decide in each case the peculiar problem presented in that particular case. Select the apparatus according to the case. Develop an idea of the apparatus that is needed for immediate use and that will be needed for subsequent use. A decision will have to be made as to how early such apparatus can be temporarily discarded to allow for massage and motion, and how long it should be worn in order to protect against further injury. Remember that repair in cancellous bone is more rapid than in cortical bone.

Also remember that rapidity of repair will depend very largely on the blood supply of the fragments. Remember that there is such a thing as atrophy of disuse, in bone as well as muscle. The inherent value of any apparatus is of less importance than the skill with which it is used. It is not so important to use good apparatus, although that is important, but rather to use the apparatus that is at hand with the utmost skill.

Circular plaster bandages are permissible only when completely divided in at least one line.

MASSAGE AND MOVEMENT

If carefully and gently carried out, massage and movement can be of the greatest help. They can also cause much harm. Differentiation must be made between the various movements of massage and movement. In massage there may be:

a. Gentle stroking without deep pressure.
b. Stroking with deep pressure.
c. Kneading.

and in movement:

a. Guided active motion.
b. Unaided active motion.
c. Passive motion.

With these various forms kept in mind they may be begun as soon as there is not danger of any additional injury or any displacement of the fragments. Gentle massage and movements may cause discomfort but should never cause actual pain. Forced passive movements usually means harmful stretching or tearing of soft parts and makes additional repair necessary.

THE USE OF THE X-RAY

It is wise to examine all injuries, and especially those that are near or involve a joint, with the x-ray, as many fractures have been overlooked.

Two views at 90 degrees or stereoscopic x-rays, should be made.

Care should be taken in placing the patient to avoid distortion, which might not only exaggerate a slight displacement but might minimize, in appearance, a marked displacement, which would be worse. Utmost care must be taken in removing dressings, as many times it is necessary to remove dressings in order to get an accurate diagnosis. The surgeon should remember that the x-ray man does not like to do this and, if the case is one in which there is the least danger of displacement, the surgeon should accompany the case to the x-ray department. Of course, opaque metal splints are not used any more.

It is well to radiograph before and after reduction of fractures, but, by all means, take roentgenograms afterwards and preserve them. These are many times very valuable in case of subsequent disability, which may be layed to improper treatment. Roentgenograms may clearly show that the result is the best obtainable under the circumstances. The fluoroscope should never be depended upon for the primary diagnosis of fracture, especially in the region of a joint. Always make a roentgenogram for study and record.

Fluoroscopic reduction should never be made a routine procedure, because of the dangers entailed. Dr. William Bowman, radiologist, of Los Angeles, does not believe in it at all because of the dangers. He always makes films and develops them quickly, while the patient is still in the room, and then better reduction may be attempted if indicated. There are many instances, however, in which fluoroscopic reduction seems indispensable.

Prognosis may be indicated, in some instances, from the x-ray, as, in the neck of the femur, from comminution or from inability to coapt the ends of the fragments properly or satisfactorily. The progress of healing or union can be watched, and the x-ray shows when complete union has taken place.

OPERATIVE TREATMENT

Operative treatment is indicated when a satisfactory reduction cannot be obtained and maintained by non-operative methods.

It has been held by some, and especially by insurance companies, that operative treatment materially complicates the case and prolongs the disability. This is probably not true, aside from the psychological side, as a fracture in which operation is indicated is one in which the disability would be prolonged, or perhaps permanent, with-

out operation. And disability would be shortened, and perhaps permanent deformity and disability prevented or minimized, with operation.

In other words, one cannot speak in general terms and say one does not believe in the operative treatment of fractures. The problem has to be worked out for the individual case. Some cases, we know from expereince, are best treated by operation, and other cases may be treated equally well by the operative or closed method, depending somewhat upon the surgeon in charge of the case. Many times it takes more skill to successfully treat a fracture by the closed method than by operation.

I believe there is a tendency to operate less now than a few years ago. With the development of more efficient apparatus and the stocking of better equipment in the hospitals, cases that formerly were thought operative are now successfully treated by the closed method.

Some very excellent surgeons almost have a rule to make an earnest attempt to treat all fractures by the closed method. This includes several attempts at reduction before they will consider the open method. They try to keep themselves in the mental attitude that, if they cannot treat the case successfully by the closed method, they have failed and they must resort to operation to bring them out of their failure.

It would seem that this is going a little too far and that a more middle ground should be taken. For we know, from the first, that there are fractures which can be treated better by operation. No less an authority than Scudder of Boston states and teaches that the operative treatment of fractures has a very definite place in surgery. However, Scudder lays down some very definite requirements for surgeons and hospitals before attempting the operative treatment of fractures.

Internal Splinting. In the operative treatment of fractures it is not always necessary to use foreign material for internal splints. Many times open reduction is all that is necessary and then proper retentive apparatus. The tendency is to use absorbable material, rather than metal. M. S. Henderson, of the Mayo Clinic, and William L. Bell, of Oakland, both use absorbable material, as do many other good surgeons. Beef bone screws and plates are becoming more favored.

PROGNOSIS

This is a very difficult thing to determine, and, except in a very general way, usually cannot be determined at the time of injury. For example, we might say that the period of disability in a fracture of the radius is four to six weeks. This would probably be true in many cases of fracture of the radius; yet this would be modified by (1) the type of fracture, (2) the success in reduction of the fracture, (3) the associated injury of the soft parts, (4) the general condition of the patient, and, (5) the ability of the patient to throw out callus. As has been said previously, the x-ray is a help in determining the amount and the character of the callus.

The disability from a fracture of the neck of the femur might be variously estimated at from six to nine months. This prognosis is only general, and should be checked up from time to time during this period by x-ray examination. It is very necessary, from the standpoint of insurance companies and industrial commissions, to determine as accurately as possible these periods of disability. If any table could be compiled that would be at all accurate, it would be a great help. From the standpoint of the insurance company, it is better to over-estimate rather than underestimate the period of disability. It should be the rule of every surgeon to make as accurate an estimate as possible, at the time of injury, of every fracture coming on his service, rather leaning to over-estimate than to under-estimate it.

Subsequent reports of the case should be made at periods of two weeks, and, as time goes on, and with sufficient experience, it will be possible to more accurately estimate the period of disability in fractures.

FRACTURES OF THE FEMUR WITH CASE REPORT

HAL W. RICE, M. D.
Morenci, Ariz.

(Read before the thirty-seventh Annual Meeting of the Arizona State Medical Association, at Tucson, Arizona, April 19 to 21, 1928.)

In this industrial age more attention than ever before is being given to the time lost from work because of accidental injury. From this standpoint there is no group of fractures as important as those of the femur. According to the report of the British and American Fractures Committees' the average time lost in simple fracture of the femur (all sites) was 7⅛ months; of the leg (all sites) was 4¾ months; of the head and neck of the humerus, 2¼ months.

The discrepancy in compound fracture is greater still, as follows: compound fracture of the femur, 13 months; of the leg, 6 months; of the upper extremity, 4 months.

The obvious reasons for a comparatively long disability period in femur fractures are that it is the largest bone in the body and consequently requires a greater and longer bodily effort at repair, and also it affords

attachment to the strongest and heaviest of skeletal muscles and fascial planes, which accounts for a fracture deformity particularly hard to overcome.

Fractures of the femur are classified, according to location, into three groups: (1) those of the upper end, (2) of the shaft, and (3) of the lower end. Upper end fractures are generally of the neck, fractures of the head or great trochanter alone being very uncommon. But breaks of the neck of the femur are not unusual, comprising about one-third of all fractures in the aged (past 70), and are classified into two main groups, viz., through the neck, or intracapsular, and at the base of the neck, or extracapsular. Formerly it was considered important to diagnose whether the line of the fracture was intra- or extracapsular, but it is now recognized that the real determining factor, from the clinical standpoint, is the existence or nonexistence of impaction. Of the two classes of neck fracture, the intracapsular is the more serious, since impaction in these is less common; and also the periosteum of the neck is generally badly torn by the fracture, the blood supply of the femoral head thereby greatly impaired and the callus output from that fragment is consequently slight. Breaks of the shaft occur about three times as often in the middle third as in the upper or lower thirds. Fracture of the lower end, i. e., of the condyles or between them, is rather unusual.

Diagnosis of fractured femur can frequently be made by inspection alone; the disability of the lower extremity is so complete, the deformity marked and shortening is readily determined. Characterizing upper end fracture is elevation of the great trochanter above Nelaton's line, with shortening of the limb corresponding to the amount of upward displacement of the lower fragment. The position of the entire limb is typically eversion because of the unrestricted action of the rotator muscles attached to the great trochanter. Great care should be exercised in examining upper end fractures on account of the possibility of separating an existing impaction but, if shortening is marked, it is highly improbable that impaction will be found.

Both shortening and deformity are most noticeable when the shaft is broken. Abnormal mobility and crepitus are also more easily demonstrated than in fracture at either end. When the upper third of the shaft is the seat of the injury the short upper fragment, as a rule, is considerably displaced, being flexed forward and abducted with rotation. In the lower third the strong pull of the gastrocnemius, attached to the posterior aspect of external condyle and shaft, causes a sharp backward displacement of the lower fragment which not uncommonly presses dangerously upon the nerves and bloodvessels of the popliteal space. This must be remembered and an examination immediately made to determine the condition of the circulation below the knee.

In condylar and intercondylar fracture, there is generally marked effusion into the knee joint, causing diagnosis in this location to become very difficult without aid of roentgenograms.

Let me but touch upon a few salient points of treatment: The element of shock, the possibility of impaction and the danger of injury to important surrounding structures, make first aid treatment in femur fractures of paramount importance. Complete immobilization should be secured before any attempt at moving the patient is made. The Thomas splint is the ideal first-aid for dressing, for, by means of it, a certain amount of traction can be begun at once. After the patient reaches the hospital, during the course of x-ray and other examination, an assistant should be given the responsibility of maintaining extension by holding the limb constantly with gentle traction until the examination is completed and permanent treatment instituted. Thus not only are shock and suffering reduced but deformity due to muscle spasm and fascial retraction, is minimized from the beginning.

In hip fracture with satisfactory impaction, immobilization in the plaster spica with the extremity in moderate abduction is all that may be indicated. Twenty years ago Cotton introduced his method of converting the unimpacted neck fracture into the impacted type. He recently[1] reports continued success of this method but stresses the point that he thereby is making only "an initial fixation which corresponds to the more favorable type of accidental impaction. One must fix the limb in the spica just the same as in the rare case of satisfactory accidental impaction." Artificial impaction, doubtless, is ideal treatment in experienced hands; it has also a certain application in old as well as recent cases. But the method first demonstrated by Royal Whitman, in 1904, is the treatment most generally employed in recent unimpacted fracture of the neck. As to the usefulness of the Whitman method, F. Jones[2] finds that a favorable prognosis can be given in 75 per cent of cases so treated and Meyerding, speaking for the Mayo clinic, reports satisfactory results in twenty-seven of twenty-nine recent fractures of the femoral neck.

In fractures of the shaft, the great problem is to combat the deformity, for in no

other situation is displacement so liable to be marked or difficult to overcome. Scudder particularly calls attention to the active part played by retraction of the great fascial planes of the thigh (the strongest in the body) in increasing deformity when the bone is broken and in maintaining reduction when the bone is restored to its natural position. "Moreover," he states, "it is a fact that delay in setting the fractured bone is attended by increasing difficulties of reduction, largely because the fasciae become stiff, filled with round-cell infiltration. As time elapses these planes of fasciae can with greater and greater difficulty be stretched to their normal length."

Therefore the proposition of reduction of shaft fractures is mainly one of extension and counterextension, to overcome the adverse pull of muscles and fasciae, and the earlier it is begun the greater the chance of success. One common cause of failure is the use of too little weight. Unless extension is applied within the first hours of the injury, the average adult femur will require from thirty to forty pounds of skin traction for two or three days, or approximately one-half that amount by the skeletal method. As the fragments line up, weight may be gradually diminished. Suspension of the limb is a great aid towards the attainment of good alignment, especially in fracture of the lower or upper thirds of the shaft. The position of abduction so essential in upper third breaks, and the flexion of hip and knee, in addition to traction, in the lower third, are best obtained by suspending the limb from a Balkan frame, using the Thomas or Hodgens splint for immobilization. Fracture of the middle third is, as a rule, more amenable to reduction by traction and it is here that the old Buck's extension is particularly applicable.

Operative treatment is indicated in all instances of non-union, in many cases of delayed union. or when union can take place only with the fragments in such bad position as to interfere with useful function. Though the decision upon open reduction automatically assumes the surgical liability of infection, and though infection in these cases may mean bone necrosis or even amputation, still it is a sad reflection upon modern surgical asepsis, on this account to refuse the good chance of restoratoin to perfect or nearly perfect function to those patients who would remain otherwise more or less permanently crippled, or whose healing would be indefinitely delayed. Only by open operation can interposing soft tissues be removed, sluggish fragment ends freshened and stimulated by curetting, or vicious union corrected. The adult femur is too large for employment of absorbable material, such as beef-bone plates and screws, for internal fixation. Parham bands are especially useful in oblique or spiral fractures, while in the transverse type not difficult to maintain in good apposition, Lane plates may be chosen.

Of course surgical asepsis is nowhere of greater importance than in bone surgery. The technic taught by Lane, meticulously carried out, is most certainly clean surgery but, to be a practical procedure, requires more practice in bone work than most surgeons get to do; also, it is time-consuming, and, though haste is never advisable, speed is often a great desideratum. Is it not possible that as perfect asepsis can be more simply attained? For several years at the Phelps Dodge Hospital, at Morenci, we have routinely treated surgical wounds thoroughly from the bottom out by swabbing all surfaces with sponges saturated with mercurochrome two per cent. This very simply procedure has been instrumental in doing away entirely with wound infection in clean cases, while in "dirty" cases the degree of inflammatory reaction of the wound is probably lessened.

Authorities agree as to the conduct of the convalescent period. that is, after union has become firm. Ordinarily, at eight weeks, all apparatus may be removed but for a week or two the patient remains in bed while massage and passive motion are begun. No weight-bearing until after the ninth week. and then very cautiously and with use of protective appliances, such as walking calipers or a light spica. At the end of three or four months, all support may be discarded and the patient encouraged to walk on the limb. Fixation and disuse of the limb for a prolonged period of time often results in an undesirable degree of osteoporosis. Too early weight-bearing, however, is the common cause of bending or bowing of the bone.

CASE REPORT

The case I report offers a somewhat interesting and unusual history, interesting in the number of injuries sustained, and unusual, I hope, as regards his postoperative record.

C. E.. Mexican miner, age 20; light wiry physique, 5 feet, 3 inches tall; weight, 120 pounds.

On June 20, 1927, this man's body was caught and jammed between an elevator in the mine and the wall of the elevator shaft. Examination made at the hospital, an hour later, revealed the following injuries:

1. Vertical fracture of the mandible in the right cuspid region.
2. Simple transverse fracture, upper third, right femur.
3. Simple transverse fracture, upper third, left femur.
4. Internal abdominal injury, as evidenced by lower abdominal rigidity and, a few hours later, by the passing of bloody and tarry stools.
5. In addition to these major injuries, he also

had compound fractures of four of the metacarpals of the left hand, with partial avulsion of the thumb.

Roentgenograms showed characteristic displacement of fragments of the left femur but, on the right side, separation was extreme; also on this side, there was a large fluctuating swelling, undoubtedly a massive hematoma. Primarily because of the difficulty of reduction or even of immobilization of these widely separated fragments by ordinary means, it was decided to do an immediate open reduction of the right femur. The patient's general condition was fairly good, pulse 78, respirations 24. Intravenous saline was given throughout the operation, and a Lane plate put on. Postoperative reaction was complicated by increasingly severe hemorrhages from the bowel, the patient's condition becoming so serious as to prohibit any treatment of the left femur other than by sandbags, until four days later, when skeletal traction (19 pounds decreasing to 15 pounds) was applied. He remained thus, right femur plated and in plaster spica, left femur suspended in abduction and held by caliper traction for eight weeks.

In the meantime, the internal abdominal injury of unknown character gradually subsided, gross hemorrhages disappearing on the fifth day; the left thumb was amputated and the mangled hand cared for. But for many weeks the fractured mandible required much attention, such as wiring and also curetting of the fragment ends on account of suppuration and necrosis. This broken jaw was slow in repair and interfered seriously with nutrition. The enforced liquid diet soon became unacceptable to the patient's stomach and he vomited at least one meal a day. It was three months before he could be given food requiring mastication.

X-rays taken through the cast at the end of seven weeks, showed the fragments of the right femur in perfect position. A week later, the spica was removed and no other support put on. Three weeks later (eleven weeks after the accident and three weeks after removal of the spica) another roentgenogram showed slight bending of this femur though the patient had been constantly confined to bed. In the same picture, considerable callus formation on the left side was observed. But mobility was still marked on this side twelve weeks after the fracture and union so greatly delayed demands operative treatment, especially when position is none too good. This was done on September 14, the fragments being easily held, as in the other femur, by a small Lane plate. Following this operation the spica was left on for eleven weeks; moreover, he was given another two weeks in bed before weight-bearing was started. Walking calipers, or other supports, were obviously impractical here because of involvement of both extremities. So weight-bearing was begun very cautiously and with assistance, five minutes the first day, increasing a few minutes daily up to forty-five minutes on the fourteenth day; then crutches, carefully and for only a few minutes at a time. One morning, about five weeks after beginning with the crutches, a bony prominence of the left thigh was noticed, which proved to be a bad bending. This was six weeks after the start of weight-bearing, nineteen weeks after the plating of this femur. Attempts to straighten the soft callus by extension and manipulation, even under ether anesthesia, being ineffectual, osteotomy was done on March 7.

It seems probable that we now have a fairly good restoratoin of both sides, but bending in each case spoiled an otherwise excellent result. In the instance of the first femur the bending occurred after eight weeks of immobilization in the spica, with the fragments in perfect positon, and while the patient was still confined to bed. On the other side, it began probably with the beginning of weight-bearing, though this was not started until more than thirteen weeks had elapsed from the time of open reduction. Syphilis is ruled out by two negative Wassermanns. Solid union has been encouraged by stimulative diathermy and untraviolet treatments in addition to massage. What seems to be the most acceptable explanation for soft callus formation in this young man is the interference with normal repair resulting both from the rather large number of major injuries sustained, overtaxing his recuperative powers, and to the semistarvation diet necessitated by the fractured mandible.

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DISCUSSION

(Papers of Drs. Rice and Greer.)

DR. C. A. THOMAS, Tucson, Ariz. (opening): I will not attempt to discuss Dr. Rice's handling of his patient except to say that the results justify the methods used and certainly they were proper. He undoubtedly had a patient badly shocked and in poor condition, and while he undoubtely acted wisely, how many here, like me, would have felt called on to investigate the abdominal condition first? However, we are discussing fractures and I would rather call attention to some of the things Dr. Greer mentioned. He expresses one important point well when he says: "Do not do anything that will render further damage to the already damaged limb." We see many fractures that have been handled by a number of other people first, and one of the things we are frequently impressed with, is the lack of care that has been given to the superficial parts. Often we find that, if a limb has not been blistered by the orginal injury, it has been painted with iodine and then wrapped with a tight bandage, and we find it blistered. That makes it impossible to put on traction immediately, or to dress the wound so that the fractures can be held in place. Therefore, I want to call particular attention to the care of the skin and repeat Dr. Greer's warning not to do anything that will further damage an already damaged limb. Yesterday, something was said about hemorrhage in fractures. We always have more or less hemorrhage in fractures, and this has a great deal to do with the final functional result. Hemorrhage frequently is valuable, but, if it is large, it interferes with reduction, and if it becomes infected, which it easly does, you have further complications. The doctor spoke of using mercurochrome in open reduction of clean wounds. I have never done this in fractures, but a few years ago I had an idea that by using mercurochrome, which is very mild and kind to the tissues I could avoid all infection in abdominal wounds. Experience soon taught me that, in every wound where I used mercurochrome, there was an exudate which retarded healing by primary union. Therefore, I would feel hesitant over using mercurochrome in a clean open wound.

In treating fractures of any kind, we should give immediate attention to the fracture. If you see a patient today with a fracture, that patient should be treated today, if possible, and not put off until tomorrow. If it is at night, dress it or put it in position so that the patient cannot do himself damage, relieve pain so that shock will be stopped. If it is compound, by all means do a complete debridement as quickly as possible, and, if the fracture is such that it is going to require plating, plate it at once, leaving the wound wide open if

necessary. I know that is considered poor surgery, by some people, but I have gotten away with it a few times, and would repeat it again if necessary. Dr. Rice had some bending shown in his x-ray and I also noticed at one end of his plate the screws had pulled out. That is the reason I object to screws and prefer the bone peg. Bone will not heal in contact with metal, the screws will loosen and you lose control of the bone.

I want to repeat a third time, because I consider it all important, do not do any further damage to a fracture. In many fractures there are repeated attempts at reduction; much damage can be done by this and you will often get infection from such repeated attempts at reduction, probably brought about by superficial infection, with a tight splint causing slough.

DR. R. D. KENNEDY, Globe, Ariz.: This is getting to be a very important subject. It is more important today than ever before, due to the prevalence of the automobile. People are getting out into the sparsely settled districts more than ever before, and there are a great many more fractures from auto accidents in sparsely settled communities. In such communities, if there is a doctor, he is away from the industrial centers and has probably had little experience in the treatment of fractures. Many of these injuries are so severe that the patients cannot be transported, so that it is very important that every doctor in the country today know something about the treatment of fractures. Every doctor in such a community should be supplied with a Thomas splint for transportation of patients. It is not difficult to build a Thomas splint, and, even though the riding causes some hemorrhage, the period of transportation will not extend over many hours and it is not going to do the patient any particular harm. You can get traction and immobilization if you put a towel on the shoe and pull it tight against the lower end of the splint, and can transport the patient in comfort. Another point with regard to fractures near the joints: we have been too timid about early mobilization of these cases. In many of them you will get good union, but the period of disability is prolonged by the stiffness in the joint. In most of them, if properly reduced at first, you can start mobilization as early as two weeks after the injury. Mobilization need not be great to start with; move it a few degrees at first and gradually increase the amount of motion day after day, and, by the end of a month, you will have practically full range of motion, without pain. If you let it go until you can see callus in the x-ray, it will take three months to mobilize the joint: by starting earlier, you can get patients back to work months sooner.

DR. W. L. BROWN, El Paso, Texas: I was especially interested in Dr. Rice's femur case. Sometimes I think that I should like never to see another fractured femur. This bending of the femur is a thing that you have the greatest difficulty in overcoming. Muscle unbalance has the most to do with it, and it is strange how it can come with a spica cast on and patient in bed. It does not seem possible that there is room in the cast for this to occur, and still it will take place. Callus may be still soft when the apparatus is taken off, and by the next morning there is a great deal of bending.

Dr. Rice talked to me about his case, and I do not see how he could have handled it any better. A man with that many injuries could not be treated any other way. Dr. Rice did not observe the hemorrhage from the bowel until after the first operation, which I do not think Dr. Thomas quite understood. I feel like stating again that I wish I might never see another fractured femur.

DR. HAL RICE, Morenci, Ariz. (closing): I doubt very much if we should have had the temerity to attack the first femur surgically, if we had realized the severity of the abdominal injury. It was some six or eight hours after the operation that the repeated hemorrhages began. Indications then were lower abdominal rigidity, with urine negative for blood and no pelvic fractures; we did not realize what a serious abdominal injury it was. I quite agree with Dr. Thomas' suggestion as to the care of the skin in every case, because one can traumatize an already injured limb by applying skin traction. In femur fractures, we prefer the caliper traction. Regarding the use of mercurochrome on skin wounds: I have absolutely no authority for using it except my own experience, but, in the past five or six years, have used it in several hundred instances, in clean cases as well as dirty ones, and have seen no case requiring drainage of the wound. Have never used drain to relieve serious effusions, and I am convinced, from my own experience, that mercurochrome does keep down the amount of inflammatory reaction that one gets in dirty cases, and has been greatly instrumental in giving us a clean record as regards infection in clean cases. That bending did not occur in either bone until after at least seven or eight weeks. The pictures show that the plate, as small as it was, was holding the bones in perfect apposition. It was after the removal of the spica, first on one side and then on the other, that the bending occurred. The period of usefulness of the internal fixation apparatus had passed, so I can hardly see that the loosening of the screws had anything to do with the bending.

ACUTE INTESTINAL OBSTRUCTION

E. PAYNE PALMER, M. D., F. A. C. S.
Phoenix, Arizona

(Read before the Staff Conference of St. Joseph's Hospital, Phoenix, Ariz.)

Acute intestinal obstruction is one of the gravest and most dangerous of surgical emergencies. A. L. Holland dogmatically asserts that the hope of cure by surgery diminishes with each hour that such treatment is withheld. If acute obstruction goes untreated, the patient dies in from a few hours to ten days.

While much has been written on this subject, it is still a live one, and too much attention cannot be given it until the appalling mortality of nearly 60 per cent is materially reduced. The principal reason for this high mortality is the failure to diagnose the condition early. W. D. Haggard says the life of the patient depends on the intelligence and promptitude of the first physician who sees the case, and not on the skill, method or experience of the surgeon who sees the case later. Operations in the first twenty-four hours are extremely satisfactory and the mortality low, but few cases come to operation during this period. It is usually several days, a week, or more, before they come to operation, as was the case in this series.

There are two factors that determine the fatal issue: the actual obstruction in the intestine, and the absorption of the toxic elements from the bowel. There is considerable controversy as to the origin of this toxin, but agreement as to where and how it is formed.

The blood chemistry changes noted in uncomplicated intestinal obstruction are almost identical with those found in complete starvation. There is a marked diminution in the chlorid and an increase in the non-protein nitrogen and urea-nitrogen. There is a depletion of the chlorides before protein destruction begins, with a rise in the non-protein and urea elements of the blood. While 30 mgm. per hundred cubic centimeters is the normal non-protein nitrogen, extreme retention is evident in obstruction (one of our cases showing 300 mgm.). Findings over 100 are considered in the danger zone. Kilduffe says there are only three conditions showing extremely high non-protein nitrogen; uremia, hemolytic anemia and acute intestinal obstruction. The urea nitrogen is increased in practically the same ratio as the non-protein, 12-15 mgm. being the normal range and, in operative cases, 30 mgm. indicating a bad prognosis. One should always resort to blood chemistry to assist in clearing up a questionable diagnosis.

After the diagnosis is made, the preparation of the patient for operation is most important. The stomach must be emptied and washed out, and, in many cases (as in one of this series), the duodenal tube introduced and left in for drainage will prove exceedingly beneficial. A blood chlorid of 400 mgm. should be a signal for generous administration of sodium chlorid. Sodium chlorid has a definite protective value against the toxemia, and is essential in the treatment of this condition, both before and after operation. A rough estimate is that one gram of chlorid to one kilo of body weight should be given as an initial dose in every toxic patient, and some clinicians have given as high as 90 gm. of sodium chlorid per day. This is best given intravenously in 5 per cent solution. Glucose should always be given in conjunction with the sodium chlorid when the cases are of long standing. We have been using intravenously, in patients of average weight, 500 c.c. of a solution containing sodium chlorid 5 per cent and glucose 10 per cent, and repeating every six to twelve hours as indicated.

In all abdominal operations, dexterity, rapidity and surgical judgment are necessary. Here speed is imperative. The surgeon must determine what has to be done and do it quickly.

DON'TS IN INTESTINAL OBSTRUCTION

Don't fail to suspect intestinal obstruction when there is vomiting, colicky or cramp-like pains, visible, palpable or audible peristalsis, inability to expel gas and feces, and absence of fever.

Don't fail to make an early diagnosis when you have the above symptoms.

Don't give physics when you are uncertain about the diagnosis, and then don't give physics at all.

Don't give morphine to relieve pain in acute abdominal conditions until the diagnosis is made.

Don't delay the operation in intestinal obstruction, except so long as to properly prepare the patient.

Don't fail to treat the toxemia after the obstruction is relieved.

CASE REPORTS

Case 1. (Record No. 12439.) Male, age 14, entered hospital November 22, 1927, with the history of having received an abdominal gunshot wound which had perforated the intestines, two weeks previously, and had been operated upon and the perforations closed. He made a fairly satisfactory immediate convalescence, but developed constipation, colicky pains in the abdomen, nausea and vomiting, all of which persisted. Physical examination showed extreme emaciation, anxious expression, tongue furred and coated, abdomen covered by dressings held in place by adhesive. When dressings were removed, abdomen was found distended, with a scar in mid line between the umbilicus and symphysis. Abdomen tympanic, extremely tender. During examination patient vomited large amount of duodenal contents of characteristic fecal odor and brownish color. Patient's condition too critical to permit immediate operation. Deemed advisable to wait until brought back to better condition.

A duodenal tube was inserted and a large amount of brownish, foul smelling matter drained away, and tube was left in position. Proctoclysis of glucose and soda were commenced.

The patient was given, intravenously, 500 c. c. of 5 per cent solution of glucose in normal saline solution. The same evening 1000 c. c. of the same solution were given, and this dosage repeated twice the following day, and again on the morning of the 24th, when his condition had sufficiently improved to permit of operation.

Under ethylene and local anesthesia, a left paramedian incision was made about four inches in length. Intestines were found adherent to anterior abdominal wall at the point of the incision of previous operation. Numerous adhesions were found in the intestines and omentum. Intestines were distended and filled with fluid. The obstruction was located at about the center of the ileum. Numerous adhesions were loosened in order to permit intestinal peristalsis, and entero-colostomy was made between the lowest possible point in the ileum and the sides of the cecum. The wound was closed without drainage. The duodenal tube was allowed to remain in position, and the patient was given water by mouth within a few hours. Proctoclysis was continued, as was the intravenous medication. On the second day, he was given liquid nourishment, which was continued for three days, at the end of which time the duodenal tube was removed and a soft diet given.

The particular points of interest in this case are that we must be careful in closing perforations of the intestines, in order to prevent obstructions, and that the duodenal drainage and preparatory treatment of this class of cases is especially important, and will frequently save lives.

Case 2. (Record No. 12,697). A baby, seven months old, previous health good. Baby awakened from sleep with a scream. Vomited at once and continued to cry. Was given breast feeding, which was immediately vomited. Was given castor oil without any effect. Enemas were ineffective. Baby

was examined by physician twice during that day. Consultation to determine cause. Consultant advised sending baby to a pediatrician, so it was referred to Dr. Fournier, who made a diagnosis of intussusception, offering but little hope for recovery. Infant in semi-coma, cyanotic. Abdomen slightly distended, tympanites and tenderness over entire abdomen. No rigidity. No mass apparent in abdomen. Blood around anus. Bloody stool passed frequently. in small amounts.

Under local anesthesia, median incision between the symphysis and umbilicus. Free fluid found in abdomen. Small intestine distended. About four inches of ileum invaginated through ileocecal valve. It was impossible to reduce completely, two inches being gangrenous. This was resected. Because of the extremely critical condition of the patient, enterostomy was performed. Abdomen closed.

Normal salt solution with glucose was given. Baby's condition grew worse after returning to room. Cyanosis increased. Respiration became shallow and irregular, and baby expired about an hour after operation.

The interesting points in this case are that we had a baby who awakened from sleep with a scream, and vomited at once, which persisted. It was unable to expel gas and feces, with an absence of fever, and bloody discharge from the bowels. With these unmistakable symptoms, the diagnosis of intussusception should not have been overlooked.

Case 3. (Record No. 13,080) Male, age 44, entered hospital February 19th at 6 p. m., with the following history. On February 14th had sudden onset of cramplike pains in the abdomen, followed by nausea and vomiting. Vomiting persisted and increased in severity. At first it consisted of food and bile, later became fecal, and the odor was foul. After the onset of pain, physician was called, who advised him to enter another hospital, which he did, where he remained for four days. Was then advised that he should return home, and that his condition would improve. After going home, the symptoms continued.

Examination showed face cyanotic, anxious expression, marked dehydration. Respiration was jerky and shallow. Heart sounds were feeble. Abdomen distended, tympanitic. Intestinal coils showed through abdominal wall in peristaltic movement. Vomited duodenal contents while being examined. Diagnosis of intestinal obstruction, with a diverticulitis in mind.

Under gas and local anesthesia, the abdomen was opened mid line between the symphysis and umbilicus. Large amount of fluid was found in the abdomen. Distended coils of intestines presented in the wound. Exploration of abdomen disclosed mass in the pelvis which, when brought through the wound, proved to be gangrenous ileum 18 inches long, and a diverticulum which was also gangrenous. The gangrenous condition was due to an adhesion between the diverticulum and intestines and a loop of intestine slipping in the opening. Resection of gangrenous gut and diverticulum. Closure of the distal end of intestine. Rubber tube inserted into proximal end and purse-string suture placed in end of gut around end of tube for drainage. Abdomen closed with drainage and proximal end of intestine brought into lower portion of wound and sutured to muscle sheath.

On the following day, the patient's condition was good. Nausea and vomiting had ceased, and he took water freely. With the aid of pituitrin, bowel emptied very effectively of fecal matter and gas. Next day, patient was distended, and pituitrin again very effective. Patient seemed unable to expel gas without pituitrin. Enemas, of course, not effective, because lower bowel not distended. Two days later, patient seemed worried. Pulse weak. Condition seemed less favorable. Next day the patient's condition worse. Was given saline and glucose intravenously three times that day, up to 3 p. m. Drainage from enterostomy profuse. At 8 p. m. on February 25th, patient was given 500 c. c. of citrated blood, by Dr. Milloy, preparatory to operation next day, in an attempt to connect the bowel. Patient's condition seemed very good the next morning.

Under local anesthesia and gas, opening in ileum was closed with pursestring suture, and adhesions loosened. When this was done, a large amount of foul-smelling pus poured from the wound. Large drainage tube was inserted to bottom of cavity. No further surgery was done at this time.

The patient's condition improved after drainage of abscessed cavity, but pulse was weaker than before the operation. Fecal drainage became thick and contained undigested food. Two days later patient's condition seemed worse. Fecal drainage through enterostomy lessened. Said pain in abdomen felt as it did when he first became sick. He gradually grew worse and died on March 7th, sixteen days after first operation, and eight days after second operation.

The interesting points of this case are that a physician was called early in the case and sent him to a hospital where he was under observation for four days. Either there was a failure to diagnose the case, or his condition was considered hopeless and he was sent home so as to protect the hospital's mortality rate.

Case 4. (Record No. 13,394). Patient, female, 76 years of age, entered hospital with protruding mass at umbilicus, associated with pain and dragging-down sensation in the epigastrium. Patient has had a large umbilical hernia for 47 years. Was examined by me five years ago and advised to have a herniotomy to avoid strangulation of gut. Two weeks ago she developed colicky pains in the abdomen, followed by vomiting and obstipation. Some gas was expelled. She has been unable to take food, but has taken some water during the past two weeks.

Examination showed anxious expression, pinched features, otherwise negative, except abdomen, which was pendulous, distended. Large mass around umbilicus. Umbilicus is red with abrasions of epithelium, with purulent discharge exuding from umbilicus.

Under gas and local anesthesia elliptical skin incision made around umbilicus. Sac dissected down to fascia, large sac opened, found to contain practically all the omentum and strangulated small intestine. After application of moist heat to gut, the circulation was good enough to permit gut being returned to abdomen with no danger of gangrene. Greater portion of omentum clamped, ligated and excised. Hernial opening closed by Mayo method.

Patient's condition improved. Fifth day postoperative, patient had chill. Wound opened, foul-smelling pus drained, which cleared up nicely under Dakin's and heat. Patient left hospital six weeks after operation, entirely well.

Here we have an old lady with a hernia of forty-seven years' duration, who has had a partial obstruction for two weeks without great damage to the bowel, and an exceedingly satisfactory recovery.

Case 5. (Record No. 13,520.) Female, age 35, entered hospital April 20th, 1928, with a history of having developed severe abdominal pains in the lower left iliac region three days previously. Later the pain was in the right iliac region. Pain was associated with nausea and vomiting. At the onset, the pain was of sufficient severity to require the administration of morphine. There was marked constipation. Physics were given, but were vomited. Enemas were used without any effect other than the expulsion of some gas.

Examination negative down to abdomen. Abdomen distended, tenderness over entire abdomen. Rigidity of lower portion of abdomen most marked on right side. Tenderness most marked over right iliac region. A provisional diagnosis of appendicitis was made, but when the white blood count was taken it was 3,600. This was against the diagnosis of appendicitis, so a blood chemistry was ordered. Bimanual examination made, showed uterus enlarged and tender, tubes palpable and tender. Physical findings indicate appendicitis, with blood picture and chemistry against this diagnosis. The white blood count when frst taken was 3,600; taken a few hours later, was 2,800. Non-protein nitrogen was 300 mgm. per 100 c.c. of blood, or ten times above normal. Provisional diagnosis of partial intestinal obstruction made. Sodium chlorid and glucose were given intravenously.

Laparatomy was performed under gas and local anesthesia. Four-inch incision was made between the umbilicus and symphysis. When the abdomen was opened coils of distended intestines presented themselves. Examination showed adhesions between the ileum, uterus, sigmoid and cecum, producing three distinct points of obstruction, all of which were incomplete. There was a chronic inflammatroy process in the pelvic organs and in the appendix. By blunt and sharp dissection, the obstructions were released and the raw surfaces covered over. No attempt was made to correct the pelvic and appendiceal condition. Following the operation there was no discomfort, no nausea, or vomiting. The patient's bowels moved voluntarily a few hours after the operation, and she made an exceedingly satisfactory recovery, leaving the hospital in fourteen days, in very satisfactory condition.

The particularly interesting point in this case was the sudden onset of symptoms in a case of chronic inflammatory process the exceedingly low leucocyte count, the very high non-protein nitrogen, and a very satisfactory convalescence, with no further disturbance from the chronic inflammatory conditions.

DISCUSSION

DR. WIN WYLIE: Intestinal obstruction is just as old as mankind and just as dangerous as any condition and just as deadly as it ever was. When we speak of ordinary obstruction, Dr. Palmer has told us that 60 per cent die. Now that is true, without any question, but it does not give the true condition. If you take many cases, such as intussusception, for instance, in which the diagnosis is made quickly, the prognosis is too severe, but from a surgeon's standpoint—from my own personal experience—60 per cent does not begin to take care of it. For instance, take a case when the internist or family physician has been called to the bedside and looks over the patient and gives the patient a round of calomel. Why does he give him calomel? Because he is vomiting and cannot keep other cathartics down. Thus, three or four days are lost before the case reaches the surgeon. Has that man 40 per cent of a chance to live? Not one-tenth of one per cent. The responsibility is only shifted from the physician to the surgeon. I recall a case I operated on twenty years ago. I was called in to operate on a woman who was in a dying condition, by men who were antagonistic to me. I operated, opened her abdomen and found the abdomen full of fecal matter, castor oil, water and everything else that could possibly get into the intestines. A little adhesion following a previous operation, perhaps 1/16 of an inch in diameter, was found. It had severed the necrotic gut and the contents had flowed out—the Lord only knows how long the gut had been open. I made strenuous objection at the time prior to operation, both to the physicians and the husband of the patient, objecting to the operation on the ground that it was too late for a possibility of recovery and upon the further ground that it was not right to shift the responsibility from the medical men to the surgeon. Did this patient have 40 per cent of a chance to live? She had no chance at all. My pseudo friends did do me the kindness to say that I performed the operation with great dexterity and rapidity. She was dying when she went on the table and lived one hour after she got off. This carries another lesson with it: if these doctors had recognized the condition, say, forty-eight hours earlier, her life could have been saved, without much damage being done, simply snipping a little adhesion, which would have cured this woman.

All of us have seen cases of strangulated hernia go on and on, accompanied by stercoraceous vomiting and nausea, not seen by a surgeon before the patient is beyond recovery. At operation, the necrotic intestines are filled with gas and food; the intestines are drained, if you like—the patient will die anyway. The time is coming when the physician in this class of cases will pay more attention to saving the life of the patient than to his own reputation. Of course, physicians and surgeons both have to make a reputation, and so they don't want to make a mistake and tell the patient that he must have an operation and find, a few hours later, that the patient has had a bowel movement. The time is coming when we are going to depend on enemas, and when we are unable to get fecal matter, and there is nausea, pain and distention, instead of more castor oil, etc., the patient will be put on operating table at once. If it is a mistake, what harm has been done?—the patient will get well without much inconvenience. Almost always, even if there is no obstruction, you have some other abdominal trouble which warrants an operation. The one important thing is, as Dr. Palmer has said, we must emphasize the importance of diagnosis, and, if the internist will just give the surgeon half a chance, we will save many a life. I remember one case in this hospital, quite a number of years ago, of a young woman who said she had good bowel movements each day, but we knew she had a surgical abdomen. In opening her abdomen, we found about ten feet of necrotic bowel, with abdomen filled with foul matter from intestines. Again, the operator had no chance in the world to save this woman. Morphia should never be administered until operation is set, and abdomen should be opened as quickly as possible after diagnosis of intestinal obstruction is made.

DR. W. W. WATKINS: I have observed two cases of suspected bowel obstruction, in both of which, by x-ray, we were able to decide after examination that there were no obstructions present. One of these cases was having fecal vomiting and other symptoms of obstruction, including distended abdomen. By x-ray examination we were able to state positively that there was no obstruction present. The other case was also vomiting but did not have fecal vomiting. In this case there was evidence of bowel obstruction, both by x-ray examination and physical examination. It was necessary to give this patient barium enema, by means of which we were able to state positively that there was no obstruction in the large bowel. Dr. Wylie comments about the use of enema in such cases. By giving barium enema it is possible to visualize the large bowel, and determine within few minutes whether obstruction is present in the colon, and its exact location. The two cases mentioned, coming close together, in which it seemed positive that obstruction must be present, in which x-ray examination determined that no such condition existed, seem to be worth remembering.

CASE OF BRAIN ABSCESS WITH RECOVERY

JOHN J. McLOONE, A. B., M. D.
Phoenix, Arizona

(Read before the monthly conference of the Staff of St. Joseph's Hospital, Phoenix, Arizona).

J. G., age 24, female, white, first came under my care January 25, 1928. She gave the following history:

"Ten years ago had abscesses in both ears as a complication of measles. One month ago became ill with scarlet fever. A week after the beginning of this illness experienced pain in left ear. Drumhead was opened by her attending physician. Pain has continued intermittently with profuse discharge. During the past ten days pain over the mastoid and left parietal region has been very severe."

Examination showed a discharge from the middle ear, sagging of posterior superior wall, and extreme tenderness over the mastoid area. Culture from ear showed staphylococci.

X-ray findings showed destruction of the cellular structure of the left ear with haziness throughout the mastoid process and increased density in the superficial cells.

Patient was admitted to hospital on the 25th of January with temperature of 99.8; pulse 110; respiration 20. Blood count: red cells 3,800,00; white, 15,200; hemoglobin, 80 per cent; mononuclears, 14 per cent; polynuclears, 86 per cent.

On the following day I did a mastoidectomy on the left side. Following skin incision, cortex disclosed a fistula through mastoid cortex extending downward to tip and posteriorly toward the lateral sinus. Mastoid was large and of the pneumatic type. Antrum was placed high and deep. There was a small amount of granulation tissue in mastoid antrum. All mastoid cells were destroyed and replaced with granulation tissue and pus. Bony wall over lateral sinus was destroyed over an area about 3 by 4 mm. Complete exenteration of mastoid cells was done. Tip, which was found to be necrotic, was removed. On account of disease having invaded posterior superior wall it was partly removed. Semi-radical mastoid operation was done.

Post-operative temperature ranged from 97.8 to 100, being around 99.6 most of the time, reaching normal quite often and remaining normal for several hours at a time. Pulse ranged from 80 to 108; respirations 20 to 22. During the post operative period there were occasional attacks of dizziness, severe headaches, and some nausea. There was no nystagmus. Eye grounds were normal. No abnormality in reflexes was found at this time. These symptoms gradually subsided after seven or eight days and from that time she made an uneventful recovery and was discharged from the hospital on February 13, 1928. The middle ear was then dry and mastoid wound was healing very kindly.

After discharge from hospital, patient was seen at my office at frequent intervals. By the 23rd of March the mastoid was completely healed. Patient then returned to her home and she did not come under my observation again until April 4th. While absent from Phoenix, she contracted a severe head cold and, as a result, had a recurrence of her mastoiditis. Her chief complaint was severe pain in the left parietal and temporal regions. Pain radiated over the entire side of face.

On April 11th she was again admitted to hospital. Temperature at this time was 99.4; pulse 102; respirations 22. On the following day her temperature reached 102.4. Blood count: 14,800 white cells; hemoglobin 90 per cent; mononuclears 18 per cent; polynuclears, 82 per cent.

On the 13th of April mastoid was reopened. Operative findings disclosed a complete bony regeneration except for that section of the mastoid which is below the entrance of the antrum. There was an unusual amount of granulation tissue over the middle fossa. Dura was exposed posteriorly over an area about the size of a dime. There was an opening in the dura about 4 millimeters long. All necrotic tissues in antrum cavity and over dura was removed.

Following the operation, the patient showed the usual febrile reaction. However, on the following two days, temperature range was from 100 to 104. Pulse 88 to 102; respirations 17 to 20. Blood count on February 15th showed hemoglobin 80 per cent; red cells, 4,910,000; white 19,600; mononuclears 26 per cent; polynuclears 74 per cent. At the first dressing, a large amount of pus was present in the mastoid wound and middle ear.

On the 15th, two days following operation, there was marked rigidity of neck. Kernig's sign was elicited, and in a greater degree on the left side than on the right. On account of a generalized hyperesthesia, examination for other aberrant reflexes was not satisfactory. She was at times stuporous and again delirious. She responded to questions in regard to certain bodily activities, but expressed herself incoherently. There was an aphasia present and sensorium was at times extremely clouded. Patient gave indications of very severe pain in the frontal, parietal, and temporal regions. Mercurochrome was given intravenously, followed by a chill lasting 15 minutes.

On the following day, April 16th, spinal puncture revealed 10,640 cells per cu. mm. with some excess pressure. Cells were mostly polynuclears and fluid was blood tinged. There were no bacteria present.

Eye grounds showed some fullness in veins but no papilledema. There was intermittent ptosis of the left upper eyelid and some twitching of face muscles on the left side.

Dr. Kingsley saw the patient in consultation and concurred in my diagnosis of meningitis and probable brain abscess. His findings are as follows: "Patient is stuporous and non-cooperative. She is at times delirious. Pupils widely dilated from atropine, the right more than the left. Neck is extremely rigid. Patient objects to being moved. She has marked Kernig's sign. Reflexes are all present." Blood transfusion was given on this date by Dr. Milloy. Aphasic symptoms, together with nervous irritability, by this time had become more intensified. On the 17th, the blood culture which was taken on the 15th showed a streptococcus, which later proved to be hemolytic. The pus from the middle ear and mastoid wound had diminished considerably.

On the 18th, mercurochrome was again given intravenously followed by a chill lasting 15 minutes. For the next few days chilly sensations and periods of extreme drowsiness were noted. Temperature range was from normal to 100 and 102. Pulse varied from 82 to 110. Patient's condition remained about the same until the 20th, when she showed some slight improvement. There was some neck rigidity and a slight left Kernig's. Temperature, pulse, and respiration remained practically the same. Blood transfusion was done on the 19th. On the 20th, a blood count was made showing hemoglobin 95 per cent; red cells, 4,000,000; white, 11,600; mononuclears, 35 per cent; polynuclears, 65 per cent. On the same date mercurochrome was given intravenously followed by a chill lasting 10 minutes.

On the 21st, patient's temperature dropped to 98.4 with a slight evening rise. Pulse 84; respirations 18. She had spent a much better night. The entire picture was improved. She responded accurately to one of the direct questions asked by me and could at times ask for what she wanted.

On the 24th, mastoid culture showed staphylococ-

cus. Patient complained of some pain over left eye. There was a slight rhinitis on the left side of nose. Neck rigidity had disappeared.

On the 25th, blood count showed 80 per cent hemoglobin; 4,800,000 red cells; 13,200 white cells; 60 per cent mononuclears; 40 per cent polynuclears. Dressings were changed. There was a moderate amount of purulent discharge. Blood culture was taken.

On April 26th, the aphasia was about the same and was definitely of the amnesic type. Patient complained of pain over frontal and parietal region. There was tenderness in these regions on pressure. Kernig's and rigidity of neck had disappeared. Ptsois of left eyelid was noticed. This occurred spasmodically. Muscular movements of both eyes were unimpaired. Examination of eyegrounds showed fullness of veins of both eyes. Disks were inflamed. Both pupils were moderately dilated, the left only reached to light. The eyes were very sensitive to light.

Temperature range from April 21st to 27th was from 98.4 to 101.4; pulse 84 to 108; respirations 18 to 22. Streptococcus Immugen was being given daily.

Another blood transfusion was done on the 27th. Examination of the spinal fluid on this date showed cell count had diminished to 12 cells per cu. mm. Blood culture taken 72 hours previously showed no growth. Urine was normal.

From April 27th to 28th, the patient's temperature ranged from 99.6 to 101.8; pulse from 80 to 106; respirations from 16 to 20. Patient was irrational. Aphasia and pain were very much intensified. A complete radical mastoid operation was done. A roughening of the tympanic roof was found, with some pus in the deeper cells. Some granulation tissue was removed from over dura. Bone was removed from over dura of tempo-sphenoidal lobe. No healthy dura was encountered anteriorily, although all bone over antral roof and superior portion of tympanum was removed. After careful exploration, an extensive abscess was found in this region. About two ounces of pus were removed from the cavity. On account of the large amount of necrotic tissue present, which seemed to have invaded the entire lobe, I was unable to determine whether or not the abscess was encapsulated. Pus was obtained from the anterior, superior, and posterior regions of the lobe. Culture of pus revealed a streptococcus. The abscess cavity was drained with two long tissue drains. One was placed anteriorly and one placed toward the superior portion of the abscess cavity. The wound was left wide open. A few hours following the operation patient appeared more rational than she had during the past 4 days. Immediate post-operative temperature was 102.4; pulse 140; respirations 28.

Culture from the brain abscess showed a streptococcus. An autogenous vaccine was made and given in gradually increasing doses.There has been a gradual improvement ever since the time of the operation. On the second post-operative day she recognized the nurses in attendance and also asked some rational questions. There was no pain, patient was quite comfortable and she had very little fever. About May 20th, patient's temperature reached normal and has remained practically so up until this time. At the time of this writing, May 30th, there is a marked change in patient's general physical and mental condition. The aphasia so apparent previous to operation has practically entirely disappeared. The tympanic and antral cavity of mastoid are dry and drainage from the cerebral abscess cavity has almost ceased.

COMMENT

It is an interesting speculation to determine whether or not this brain abscess was a direct complication of the recent acute mastoiditis. The fact that the temporal-sphenoidal lobe contained an unusual amount of pus of a low degree of virulency, the finding of a large mass of necrotic tissue, and the extensive invasion of brain substance which essentially included the entire lobe would indicate a lesion of long standing. The other pathological findings, especially destruction of the posterior auditory canal wall and a roughening of the bone of the tympanic roof are frequent changes noted in a long standing mastoiditis and would tend to substantiate the chronic character of the brain abscess. The early history, too, is significant, that is, that she had bilateral middle ear suppuration following measles 10 years ago.

It will be recalled that, following the first operation, she was extremely dizzy and there was evidence of excruciating pain over the left temporal and parietal regions. This would indicate, even without other conclusive symptomatology, that she might even at that time have had some intracerebral pressure. It is possbile that the time intervening between her convalescence and re-admission to the hospital was a latent period of the abscess. The second operation on the mastoid produced, no doubt, some leakage of pus around the meninges. The spinal fluid findings—a drop from 10,600 to 12 cells, with a large number of polys—gave evidence that certain barriers were being formed to protect the meninges from further invasion. To have opened the brain abscess at the time of the second operation or shortly thereafter would probably have resulted in a leptomeningitis.

Culture of pus from abscess cavity revealed a streptococcus which proved to be non-hemolytic. Although a hemolytic streptococcus was found in the blood stream, characteristic temperature curve, together with definite chills, was absent. This could reasonably exclude the presence of a sinus thrombosis.

A meningitis becoming localized after spinal puncture and an aphasia which became more and more aggravated were two of the main symptoms upon which the diagnosis was made. The severe pain in the left temporal and parietal regions and also a very sharp pain reaching to the homolateral eye, which is due to a compression of the first trigeminal branch through the swollen temporal lobe, and intermittent ptosis (3d nerve involvement) with twitchings of the facial muscles of the left side, were also very important signs in determining the presence and localization of this particular type of brain lesion.

CASE OF MULTIPLE ANEURISMS OF THE BASILAR ARTERY WITH RUPTURE

S. H. NEWMAN, M. D.
El Paso, Texas

Patient was a Mexican, age 32, married, carpenter; well nourished individual. First saw him in June, 1926, when he came to the office complaining of pain of twelve days' duration in lower right abdominal quadrant; said the pain was not constant, that at times it extended down to right testicle and that at times he experienced difficulty in urinating, having to strain a great deal to start the flow but, once it was started, he urinated freely. After a few days this pain disappeared, but returned again for a few days in October, and again in September, 1927. At none of these times did he have nausea or vomiting or fever and his pulse was always normal. Examination revealed no tenderness, rigidity, nor muscular spasm; no mass could be made out and no hernia was present. The pain was never severe enough to disable him.

I lost track of the patient then till Feb. 23rd of this year, when his family called me hurriedly about 1:30 p. m. I found him in a semi-comatose condition and apparently in a state of shock; rapid and barely perceptible pulse; skin pale, moist and cold; pupils dilated, right one more so than left and right pupil a little irregular in outline; reflexes apparently present. He lay perfectly flaccid, but, on taking hold of arms or legs, he would resist forcibly. Tongue protruded and jaws were clamped down on it. No acetone odor on breath; breathing was a little rapid but not stertorous. The family told me that he got up as usual that morning but complained of pain in the back of head and neck; after breakfast he went out and worked in the yard until noon, when they saw him fall. They ran out to see him and found him having a general convulsion. This lasted but a few minutes and he passed off into a stupor. He was brought into the house and put to bed. A doctor was summoned. When the doctor arrived the patient partially regained consciousness, enough to make the doctor think the man was intoxicated, but he soon lapsed into a stupor again and remained so until the end. The family stated that he had never had fits before nor had any of his people, as far as they knew, and that he had not been drinking. I forced open his jaws to keep him from biting his tongue off and gave him a hypodermic of strychnine. In a few minutes his pulse became stronger. I advised the family that, if he did not regain consciousness in a few hours, they should let me know and I would send him to the hospital where further examinations would be made. About five p. m. I saw him again. He was just as I left him, only he seemed to have passed out of the state of shock. Pulse was 69, respiration 26, blood-pressure 95/70. Bladder was distended. On examination of head for possible injury, one large and several small spots of alopecia were noted. No injury could be determined. Sent him to City-County Hospital with a working diagnosis of cerebral hemorrhage, probably syphilitic. On his arrival there the interne catheterized him and examined the urine; it was negative for albumin, sugar and casts. A spinal puncture was made about 9 p. m. Needle entered canal easily and fluid drained out readily but not under pressure. Spinal fluid resembled pure blood. A laboratory report on this next day showed a four plus Wassermann. Patient died about 9:30 that same night.

POSTMORTEM EXAMINATION.

Body is that of a Mexican man about average size, slightly toward slender in type, fair nutrition, no external marks of violence; both shins show marked scarring and discoloration.

Abdomen: markedly distended bladder which did not collapse when emptied; fibrous adhesions between the omentum and bladder. The anterior wall of the bladder showed a slightly trabeculated formation; no enlarged prostate. There were some old adhesions around the spleen and a few between the gall-bladder and colon.

On opening the chest, there was no excess of fluid; heart was normal in size; valves all free and in good condition. The base of the aorta showed an old scar about 25 cm. in diameter but there was no enlargement of the aorta, and the aortic ring was not involved. There were a few slight areas of atheroma, but no calcification. This scarring looked as if it might have been syphilitic, but was not the typical scarified contracted area, with the glary surface.

The lungs were both air-containing. The left, in the lower lobe on the left angle, had considerable thickening, with a few adhesions posteriorly.

Kidneys were examined: pelvis slightly dilated and capsule slightly adherent. They were about normal in size and showed no other marked lesions.

Brain: Skull about moderate thickness. On removing the dura, vessels under the pia showed through and the arteries were opaque, yellowish in color, giving the suggestion of pus being present. On opening the pia, no pus was found, this peculiar change being due to changes in the arteries. The base was surrounded by a clot of blood, thickest over the pons, where it had crowded up the pia and formed a firm clot. On section, the ventricles contained blood-tinged fluid, but no free blood. The clot on the base was gently washed off and a perforation was found in the lower portion of the basilar artery and above it there were six or seven more enlargements of the vessel. No other lesions were found.

DIAGNOSIS: Multiple aneurisms of the basilar artery with rupture of one; general chronic arteritis of the cerebral vessels; chronic aortitis, with chronic pneumonitis and chronic fibrous peritonitis. All these changes were apparently syphilitic. (Dr. Waite).

THE PROBLEM OF EPIDERMOPHYTOSIS

NORMAN TOBIAS, M. D.
St. Louis, Mo.

In recent years, epidermophytosis has become one of the commonest skin conditions in dermatological practice. The disease has become a real economic problem because of its great prevalence in this country, its stubbornness to treatment, and its tendency to recurrence.

General interest in this condition was stimulated by the work of Whitfield[1] in 1920, Sabouraud[2] in 1910, Kaufman-Wolff[3] in 1914, and by Ormsby and Mitchell[4] in 1916. Formerly classified with the eczemas, its types were designated as eczematoid ringworm, intertriginous eczema, callous, intertrigo, dyshidrosis, or chronic eczema. The layman is acquainted with a variety of the disease as "toe itch."

Microscopical and cultural study has recently proven that a large percentage of these eruptions of the hand and feet are due

to infection with the ring-worm fungus. Of these there are twenty or more species including the Epidermophyton inguinale, which is responsible for about one-third of the cases, the Trichophyton, the Blastomyces, and the Monilia. The term "epidermophytosis", as used clinically, includes practically all cutaneous lesions in this group, regardless of the causative fungus.

Clinically the lesions are more or less characteristic, regardless of the variety of the ring-worm fungus present. They differ from micro and megalo-sporon ringworm in that they do not form rings, attack the hairs or produce kerions.

CLINICAL FEATURES

Epidermophytosis may involve any part of the skin but spares the hair and mucous membranes. Some investigators believe that the fungus or its products may even be disseminated by the blood stream and produce cutaneous lesions elsewhere. According to the type of lesion produced, the types have been designated as vesicular, scaling, macular, macerated, fissured, papular, callous, keratotic, and lichenified. However, the commonest types seen in practice are the acute vesicular, chronic intertriginous, and hyperkeratotic. The disease is most frequently seen on the hands and feet. However, careful examination may reveal areas of infection in other characteristic locations such as the genitocrural region, the axillae, the sub-mammary region, and occasionally the nails.

In the following table, the sites of one hundred consecutive cases of epidermophytosis in private practice are tabulated:

Limited to the hands	29
Limited to the feet	23
Both hands and feet	15
Hands and genitocrural region	4
Feet and genitocrural region	14
Hands and axillae	1
Hands and sub-mammary region	1
Nail involvement	3

Most of the cases occur during the summer months and persist until the cold weather, when they gradually improve or disappear. The heat and increased perspiration and the presence of a softened epidermis, no doubt account for this fact. In the winter the fungi remain dormant in the upper layers of the skin until the proper conditions for increased activity return. Frequent foci include the nails, callosities, and especially the fourth interdigital space of the foot, which acts as an ideal culture tube for these organisms because of its depth and frequent moist condition.

The clinical character of the lesions depends upon the location and the duration of the disease. Cases have been reported in patients who have had the disease as long as thirty years. The vesicular type may become pustular from secondary infection. This type is usually found on the lateral borders of the fingers and toes and is frequently very pruritic. The factors of pressure and occupation are concerned in the frequency of the hyperkeratotic type on the palms and soles. The intertriginous macerated type is commonly found in the interdigital folds. Painful fissures may develop as complications in any of the types.

The viability of the Epidermophyton accounts for the frequency of relapses of the disease. Farley[4], who studied the dry material from several cases, found that Epidermophyton cruris was viable after 432 days. Mitchell[5] was able to cultivate Epidermophyton for 180 and 300 days and Trichphyton interdigitale for 300 days. Weidman[1] was able to culture the Trichophyton interdigitale after eight months. An interesting report is that by Mitchell,who was able to culture the Epidermophyton inguinale from material brought to a boiling point in a 15 per cent solution of sodium hydroxide.

METHODS OF DIAGNOSIS

Although most cases of epidermophytosis infection of the hands and feet are more or less easily recognized by the trained observer, microscopical examination is a valuable procedure, especially in the duobtful and generalized cases. The skin is cleansed with 95 per cent alcohol and the scales or the tops of the vesicles are collected with a sterile knife or curette. The specimen is then cut upon into pieces of split-pea size, placed on a glass slide, and a few drops of 15 per cent potassium hydroxide solution added. After the cover-slip is in place, slight pressure should be made upon it, and the specimen then examined after thirty minutes with a high-powered lens. To make further studies, cultures may be made, using slants of Sabouraud's glucose media and then transplanting to Erlenmeyer flasks for more detailed study.

SOURCES OF CONTAGION

The disease apparently is not directly contagious, but is transmitted in most cases by inanimate objects. Burgess[3] studied the scrapings on the fourth interdigital space in one hundred normal individuals and reported negative findings. In 1923 I made cultures of scrapings from the fourth interspaces of fifty normal patients. I could obtain no positive cultures of ringworm. It seems therefore that the organisms are not saprophytes but are directly pathogenic.

The ubiquity of the organisms accounts for the many channels of infection. The disease is often acquired in gymnasiums, bath

houses, shower baths, and locker rooms. Among the long list of articles that have been found to harbor the fungi may be mentioned wool thread, woolen socks, woolen bathing suits, leather gloves, the leather handles of golf sticks, the leather straps of wrist watches, shoes, towels, wash-cloths, underwear, rugs, bath mats, bath slippers, floors, bath tubs, and manicure instruments.

Ordinary boiling does not seem to destroy the organisms in laundered goods. Although boiling in water for ten minutes kills the fungus in a test tube, some species are more resistant to heat than others. Weidman's studies showed that most of the species were killed at temperatures far below the thermal death points of bacteria.

Relapses are common in this disease. There are various reasons for these recurrences. Some patients are discharged before they are completely well and before all the fungi have been destroyed. For this reason, it is important to treat all the cases for a few weeks after an apparent cure. The disease may also spread, due to reinfection of the skin from scratching and picking. Unsuspected foci of fungi in other areas, such as the groin or nails, may be responsible for the dissemination of the disease.

Hyperhydrosis is often associated with the disease, a factor that may have some bearing on the prevalence of the disease in summer time. A macerated skin offers a better medium than a dry skin. In many of the intertriginous types, there is a history of excessive perspiration.

TREATMENT

Epidermophytosis is a stubborn disease to treat because of the difficulty of applying a remedial agent of sufficient penetration, and because of the impossibility of sterilizing the skin.

The two principals of therapy in this disease are (a) exfoliation, (b) destruction of the organisms. Exfoliation may be brought about by physical agents, such as light curettement, the energetic rubbing of the lesions with dry gauze, abrasive soaps, ultra-violet light, or the x-rays. Of the drugs used to produce exfoliation, salicylic and benzoic acid (Whitfield's ointment) have proved useful in many cases. The list of parasiticides includes tincture of iodin, mercurochrome, potassium permanganate, carbon tetrachloride, acroflavine, copper sulphate, ammoniated mercury, and sulphur. The numerous remedies listed above is a confession of our inability to successfully cope with this disease.

Small doses of x-ray are very useful, especially in the vesicular and intertriginous types. The itching is soon controlled and the lesions disappear much quicker than when local methods alone are used. Care must be taken that the palmar types are not treated too often, as extreme dryness may result.

In the keratotic types involving the palms of the hands, the ordinary abrasive soaps used by mechanics are of value in softening the affected areas and shortening the course of the disease.

In beginning treatment of any of the types of epidermophytosis, the dermatitis must of course be treated first and specific therapy instituted only after the process has quieted down; otherwise the resulting irritation may spread the disease and increase the resistance of the lesions to further treatment.

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PUBLIC HEALTH ADMINISTRATION IN NEW MEXICO

JAMES A. TOBEY, LL. B., DR. P. H.
New York, N. Y.

New Mexico is one of the three states in the country in which state health activities are supervised by a department of public welfare.

HISTORY AND DEVELOPMENT

A territorial board of health was organized in New Mexico as early as 1882, but this board held infrequent meetings, sometimes only after intervals of two or three years. In 1901 the legislative assembly established (Laws of 1901, Chapter XVIII) a board of health of seven, appointed by the governor for two year terms, and in 1903 (Laws, Chapter 103) gave this board extensive powers to make regulations and deal with diseases. The board was likewise authorized to appoint physicians as county health officers.

This board was changed, in 1907, to the New Mexico Board of Health and Medical Examiners, comprised of seven reputable physicians (Chapter 34, 1907, as amended by Chapter 99, 1909). It had all the powers of the former board, but never received an appropriation for any purpose. Fees were

received from the licensing of practitioners of medicine, but this source of income eventually became inadequate even to support this particular activity.

New Mexico was admitted to the Union as a state in 1912. In 1914 Dr. C. V. Chapin during his survey of state health work, found that New Mexico was doing nothing in the way of state health activities and he gave the state a rating of zero on the basis of 1000 points[1]. In 1918 a survey of public health administration in New Mexico was made by an officer of the United States Public Health Service[2]. He reported that no health work had been undertaken as a state function, except certain limited activities against the venereal disesaes, which had been inaugurated in March, 1918, as a consequence of an appropriation from the State Council of Defense. County health work was being conducted and there were a few municipal health agencies, though all these activities were decidedly limited. The health officers were all part time, except in Albuquerque, where there was a full time lay health officer. This survey contained twenty-four recommendations for improving sanitary organization and administration.

In 1919 a new public health law was passed (Chapter 85, Act of March 15, 1919), this being the first state health legislation since 1909. A state department of health was created, consisting of a board and a commissioner. The board was made up of three persons, not more than one of whom could be a licensed physician, appointed for six year terms by the governor, with the advice and consent of the Senate. The commissioner of health was appointed by the board and was required by law to be "a person having experience and special training in santiary science and public health administration." An appropriation of $13,000, the first state fund for public health in the history of New Mexico, was made, though this amount was less than half that advocated in the 1918 survey.

The first board of health had a woman as chairman, its other members being a physician and a well-known lay tuberculosis worker. The first act of the board was to request the detail of an officer of the United States Public Health Service as temporary commissioner[3]. Such an officer was detailed and served until the end of 1921, when he was succeeded by the present executive.

A child welfare service for the state had been created in 1919. In 1921 the legislature combined this service with the health department to form a state department of public welfare (Chapter 117, Act of March 11, 1921). It consisted of a board of five and bureaus of child welfare and public health, respectively, and such other bureaus and divisions as the board should deem necessary. The board was required by law to have not less than two nor more than three women as members.

PRESENT ARRANGEMENT

The board of public welfare consists, in 1928, of two physicians, two women, and a layman. There are two bureaus under its direction, the bureau of public health and the bureau of child welfare, the directors of which are appointed by the board for indefinite terms. The director of public health, required by law to be a person having experience and special training in sanitary science and public health work, is a physician who devotes full time to his duties. The director of child welfare is required to be a woman of experience and special training in child welfare work. The present director devotes full time to her duties. The compensation of each of these officials is set in the law at not exceeding $4,000 a year. The appropriation to the bureau of public health was $27.500 for each of the fiscal years (ending July 1) 1928 and 1929.

POWERS OF THE DEPARTMENT

The powers of the state department of public welfare with respect to health are very broad, being set forth in the law as follows:

> The State Department of Public Welfare shall have supervision over the health of the people of the State and possess all powers necessary to fulfill the duties prescribed by law with respect thereto, and to bring actions in courts for the enforcement of health laws and the rules, regulations and orders promulgated thereunder by the State Board of Public Welfare. It shall be the superior health authority of the State and have powoer to investigate, control and abate the causes of disease, especially epidemics, sources of mortality and the effect of localities, employments and other conditions upon the public health; to inspect public buildings, institutions and premises and industries; to establish, maintain and enforce isolation and quarantine; to close theatres, schools and other public places and to forbid gatherings of people when necessary to protect the public health; to abate nuisances; to regulate the plumbing, drainage, water supply, sewage and waste disposal, lighting, heating and ventilation and sanitation of public buildings; to regulate the sanitation of schools, hospitals and sanitoria, maternity homes, asylums, orphanages, hotels, lodging houses and tenements, factories, workshops, industrial and labor camps, recreational resorts and camps, barber shops, swimming pools and public baths, places of public amusement, and public conveyances and stations; to collect, compile and tabulate reports of marriages, births, deaths and morbidity and to require any person having information with regard to the same to make such reports and submit such information as it shall by regulation provide; to cooperate with federal health authorities; and other health agencies in carrying out measures for the protection of the public health and to incur expenditures in that behalf; to regulate the disposal, transportation interment and disinterment of the

dead; to make laboratory investigations of public health matters and maintain facilities for that purpose; to disseminate public health information; to prevent infant mortality; to prescribe prophylactic treatment for the prevention of infant blindness; to promote child hygiene; to regulate the practice of midwifery; to regulate the sanitation and safety for consumption of milk, meats and other foods: to supervise the work of local health officers, to promulgate rules and regulations governing the same, and to perform the said work, at the expense of the county or municipality affected, in case the local health or governing authorities fail, neglect, or refuse to perform said work or make proper provision therefor.

In accordance with this authority many rules and regulations have been promulgated by the board. They cover such subjects as: the control of communicable diseases; sanitation of public camp grounds; sanitation of construction camps; notifiable diseases and accidents; deaths and births; the dead, midwifery, qualifications of county health officers; infant blindness; water supplies and sewage disposal; common drinking-cups and towels; swimming pools; railway sanitation; shellfish; insanitary toilets; public school buildings .

ADMINISTRATIVE ORGANIZATION

Under the supervision of the director, the bureau of public health has five divisions as follows:

County Health Work
Laboratory
Vital Statistics
Preventable Diseases
Sanitary Engineering and Sanitation
Child Hygiene and Public Health Nursing
Public Health Education.

Each is in charge of a full-time executive. The activities may be summarized as follows:

County Health Work. This division assists local part time health officers in the control of disease outbreaks and stimulates the development of adequate local health service. In 1925 there were ten full-time county health officers, but in 1928 there were only seven.

There were in 1928 no municipal health officers in the state.

Laboratory. The laboratory makes general diagnostic tests and analyzes water samples.

Vital Statistics. This division collects and compiles birth and death statistics. The state has not yet been admitted to the Federal registration areas. This division also collects morbidity reports.

Preventable Diseases. The director of the bureau supervises this division, though the actual collection of data is entrusted to the chief of the vital statistics division.

Sanitary Engineering and Sanitation. Plans for water supplies and sewerage are received and approved by this division and investigations and inspections are made.

Child Hygiene and Public Health Nursing. This division conducts general maternity and infant hygiene work and public health nursing. The state has accepted the Federal Maternity and Infancy Act and under its terms was allotted $12,430.33 for the fiscal year 1924.

The Bureau of Child Welfare in the Department of Public Welfare has jurisdiction over such matters as child labor, mental hygiene, institutional service, community organization for social work, and social case work.

Public Health Education. This work is in charge of the director.

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CLINICAL CASE STUDY FORUM

(Based on the cases to be studied by the Yavapai County-Fort Whipple groups.)

Any medical society or hospital staff in the southwest is invited to discuss these cases and send in their conclusions for publication in the November issue of this journal.

CASES FOR OCTOBER 2, 1928

CASE 1.

A married Irishwoman sixty-one years old came to the Emergency Ward August 11 complaining of hematuria.

A year and a half before admission she fell on her knees and heard something snap in the small of her back. The following day she had gross hematuria which cleared up very soon and returned only rarely until six months before admission. Then she had another attack which immediately cleared up. X-ray examination of the genito urinary tract at this time was said to be negative. Two months before admission she had another attack. For one or two months she had had pain in the right side. For six weeks she urinated three or four times at night. There was no frequency by day. At present her urine was "very hard and sudsy." At times she had pain radiating down the lateral surface of the right hip, and also pain up the back of her neck. She tired very easily and she fainted easily. At times she felt a "smothering sensation in her epigastrium." She had marked dyspnea on exertion. Her present weight was 165 pounds, normal for her.

Here family history is irrelevant. Her past history was negative except for frequent colds and sore throats.

Clinical examination showed a dyspneic woman lying flat. The skin was pale, the lips and mucous membranes cyanotic. Numerous carious teeth. Marked pyorrhea. Heart not enlarged, action irregular, rate 120, sounds not of good quality, no murmurs. Pulses and arteries normal. Blood pressure 115/85. Lungs normal. Abdomen obese. Fullness and a questionable mass in the right flank. Right costovertebral tenderness. Pelvic examina-

tion: uterus in two degrees retroversion, moderate vaginal discharge, laceration of cervix. Pupils slightly sluggish. Knee-jerks not obtained even with reinforcement.

Amount of urine not recorded. Sediment of a catheter specimen showed 5 to 10 red blood cells per highpower field. Another specimen showed a very slight trace of albumin, specific gravity 1.025, 5 leucocytes and 1 red cell. Blood not recorded. Wassermann negative.

Temperature 101.2 deg. to 97.2 deg, pulse 90 to 115, respiration 20 to 31.

The patient had considerable pain in the right flank and seemed low spirited and exhausted. August 12 cystoscopy was done and a pyelogram taken. She seemed to be quite comfortable afterwards and slept well, although her pulse was 90 that evening. Early the next morning she awoke dyspneic and said she was dying. The pulse was 160, the respiration 48. An hour later the house officer found her dead. The chest and abdomen were resonant throughout, the abdomen soft.

CASE 2.

A married Canadian woman fifty-eight years old came to the Out-Patient Department November 4 complaining of pain and gas on the stomach of two months' duration, with a letter from her physician with a diagnosis of gastritis and neurasthenia.

She dated the trouble from a hysterectomy for fibroids of the uterus thirteen years previously. After the operation she had one sharp attack of gas and pain in the epigastrium. After this she was in good health until three years before the visit. Then when mourning for the death of sister she had noises in her head and was told that she had a high blood pressure. A year before the visit she began to have gas after eating certain things and tearing pain in the epigastrium relieved by belching. The pain occurred half an hour after meals and was somewhat relieved by eating a cracker or by baking soda. There was diffuse radiation of the pain, no definite sharp radiation to the right scapula. She once tried induced vomiting with relief. Russian oil gave much relief. Her bowels always moved one to three times daily without physic. Ten days before the visit she noticed jaundice and a little fever. Both of these had persisted. Her weight four years ago was 165 pounds, two years ago 145, the past summer 135 and at present 107.

She gave a history of urticaria, of shortness of breath for a year, growing progressively worse, palpitation for three months, appetite irregular. She had had occasional diarrhea for one or two days for a year. Her urine was occasionally dark.

Examination showed jaundice of the skin and sclerae. Tonsils large, boggy and follicular, with slight injection. Some pyorrhea and dental caries. Heart not enlarged. At the apex a moderately loud somewhat rough systolic murmur widely transmitted. First sound not entirely obliterated. Second sound clear. A systolic heard at the aortic area, probably the systolic from the apex transmitted; not heard at the pulmonic area. Aortic second sound rough. Occasional extrasystoles. Lungs normal. Spleen palpable at the costal edge, descending two fingerbreadths below the margin on inspiration. A small indefinite mass in the right upper quadrant near the midline. A median laparotomy scar in the lower abdomen.

Hemoglobin 80, red blood count 4,520,000, smear normal. Temperature and pulse normal.

The patient was given orders for sodium bromide, nux vomica and gentian compound and milk of magnesia. A gastro-intestinal series with a Graham test was ordered.

November 9 x-ray examination with a barium meal showed no definite lesion. Peristalsis of the stomach was sluggish. The duodenal cap was irritable and emptied rapidly. Examination with a barium enema was negative. The gall-bladder was reported negative.

November 18 she reported feeling much better. The pain in the stomach was gone. She was referred to the Dental Clinic, where all her lower teeth and some upper teeth were extracted. December 2 her blood pressure was 214/100. After the extraction of her teeth her digestion was much better.

December 30 she reported for blood pressure. She had had another bad attack of indigestion beginning December 22 and lasting until the visit, with severe shooting pains in the stomach and burining in the back. She raised gas and was hungry all the time. One day she had marked jaundice followed by itching, also probably clay colored stools. Her blood pressure was found to be 176/104. Her weight 98½ pounds.

She did not keep an appointment for January 5. and was not seen again at this Out-Patient Department.

CASES FOR OCTOBER 16, 1928

CASE 1

An unmarried American stenographer twenty-five years old entered the hospital January 5 complaining of abdominal pain.

For forty-eight hours before admission she had had moderately severe epigastric pain. At the onset she vomited about a cupful of reddish brown blood.

The following day and the morning of admission she vomited clear fluid. During the illness she had had fever, anorexia and marked weakness.

Her family history is good.

Thirteen years before admission she had thyroidectomy. Two years before admission she had appendicostomy for colitis. She had had periodic sensations of discomfort in the epigastrium, usually of a day's duration, which occurred coincidentally with menstrual cycles and followed complete cessation of menstruation in April, twenty months before admission. Since the onset of this her stools had had the gross characteristics of mucous colitis. Her catamenia had always been irregular. During the winter before admission she was despondent and attempted suicide with veronal. During the past few months her health had been good as compared with the past few years. She had gained weight.

Clinical examination showed a fairly well developed and nourished woman with pale skin and mucous membranes. An old scar on the anterior surface of the neck, well healed. Heart not enlarged. A soft blowing systolic murmur over the apex, not transmitted. Pulses not of good volume and tension. Blood pressure 130/70. Lungs normal. Abdomen somewhat distended, tympanitic throughout, tender over the right upper quadrant and epigastrium, especially the former, on deep palpation. An old scar over the appendix with a small fistula. Slight purulent discharge. Vaginal examination unsatisfactory. Moderate tenderness in both fornices. Extremities, pupils and reflexes normal.

Urine at admission negative. The day of death the very slightest possible trace of albumin, acetone positive, 6 to 10 leukocytes and 2 to 5 red cells per field (not a catheterized specimen), many granular casts. Blood: 21,000 to 16,600 leukocytes, 82 per cent polynuclears, 20 per cent lymphocytes, hemoglobin 50 per cent, reds 3,500,000. Wassermann negative. Stool examination showed gross blood and bile.

X-ray. The detail of the lung was obscured by respiratory motion. The right lung was slightly less radiant than the left, especially at the base.

Temperature 102° to106.2°, rectal. Pulse 112 to 167. Respirations 24 to 37.

The patient was critically ill, semidelirious. She went rapidly downhill. The medical and surgical House staff and a medical consultant could make no diagnosis. January 7 she became comatose. A lumbar puncture showed normal dynamics. The spinal fluid showed 350 leukocytes, normal chemical contents. That day the patient died.

CASE 2

A married Italian woman forty-two years old came February 26 to the Emergency Ward, where she was thought to be uremic.

For two weeks she had had headache and dimness of vision.

Her family history is unimportant. She had had eleven children. All but two had died. Her husband denied venereal disease. His pupils reacted slightly.

The only past history obtained was that she was in bed for ten days with slight fever two summers before admission.

Clinical examinatoin showed a well nourished woman. No rigidity of the neck. Transient internal strabismus of both eyes. Right eye slightly more prominent than left, with redness of the conjunctiva. Slight ptosis of left lid. Left side of face moved less than right. Smoothing out of lines on that side. Many small bilaterally enlarged cervical glands. Apex impulse of the heart not seen, barely felt in the fifth space in the nipple line, 11 centimeters from midsternum, corresponding with the left border of dullness. Right border of dullness 4 centimeters from midsternum. Rhythm slightly irregular. Sounds of poor quality. A systolic murmur at the apex, transmitted to the axilla. Aortic second sound accentuated. Pulses synchronous, equal, irregular, small volume and high tension. Artery walls not felt. Systolic blood pressure 120. Lungs, abdomen and pupils normal. Right knee-jerks present but slight. Left knee-jerk not obtained. Plantar reflexes normal.

Amount of urine not recorded, urine cloudy, specific gravity 1.029, a trace of albumin, rare hyaline casts and much pus in the single examination. Hemoglobin 80 per cent. Slight poikilocytosis, otherwise blood smear normal. Leukocytes not recorded.

Temperature 97.4° to 100.4°, pulse 120 to 61, respirations normal.

The patient was very noisy and entirely unreasonable. She complained of constant headache. February 28 there was nothing new on physical examination except possbily a little rigidity of the neck. A lumbar puncture done that day gave about 40 cubic centimeters of cloudy pinkish fluid under considerable pressure. In the counting chamber only red cells were seen. On centrifugalization red sediment was thrown down, leaving a clear colorless supernatant fluid. Smear showed red cells, rare mononuclears and very rare polynuclears. No bacteria seen. Culture: no growth. March 1 a second lumbar puncture was done and similar fluid was obtained. A neurological consultant found paresis of one or more of the ocular nerves and noted that the patient did not use the right side of her mouth well. He obtained no knee-jerks. She refused to do or say anything at his examination. A consulting oculist found the right eye slightly prominent. He was unable to make out any limitation of motion. The left eye showed convergence at times. Both fundi were normal.

The patient continued to complain a great deal of headache. She lay in stupor and suddenly cried out. March 2 she died.

The discussions of Yavapai County-Fort Whipple group, of the Maricopa County Medical Society, and of any other society or staff organization who will send in their discussions or diagnostic conclusions, will be published in our November issue. Save these clinical histories as they will not be republished. In the November issue, the discussions of the Massachusetts General Hospital clinicians will also be published, with autopsy findings.

THE SOUTHWESTERN MEETING

Albuquerque—November 8, 9 and 10.

Dr. J. R. Van Atta, of Albuquerque, chairman of the Program Committee, announces that there will be an excellent program, full details of which will be given in our October issue. The Program Committee deferred to the wishes of the Bernalillo County Medical Society, and have endeavored to formulate a clinical congress patterned after last year's meeting. The following are some of the men who will participate:

Dr. H. J. Ullman, radiologist of the Santa Barbara Cottage Hospital, Santa Barbara, Calif., will give two clinical talks on phases of his work. Dr. Ullman was one of the first men in this country to undertake the investigation of the use of colloidal lead in malignancies, after the work of Bell (England) was announced. In the field of radiation treatment, Dr. Ullman has been a leader.

Dr. Verne C. Hunt, of the Mayo Clinic, Rochester, will give two clinical addresses on surgery. Dr. Hunt is one of the well-known surgeons of the Mayo group, and is Associate Professor of Surgery at the University of Minnesota Medical School. He is a graduate of Rush Medical College, class of 1913.

Dr. Simon Jesberg, of Los Angeles, will present a paper on Bronchoscopy. Dr. Jasberg is one of the leading men on the coast in this line of work.

Dr. Dennis R. W. Crile, of Chicago, an orthopedic surgeon of Chicago, will give one clinical address on some surgical subject. Dr. Crile is a comparatively young man, graduated from Harvard University Medical School in 1917, but is one of the leaders in his line of work in Chicago.

Dr. William Engelbach, of St. Louis, hardly needs introduction. With the degrees of B. S. and M. S. from the University of Illinois, he graduated from Northwestern University Medical School in 1902, followed by postgraduate work in Paris, Berlin and Vienna. He was instructor of medicine in St. Louis University from 1906 to 1909; then assistant professor of medicine in the same school from 1909 to 1911; then pro-

fessor of medicine from 1911 to 1924. Was the chief of staff of St. John's Hospital from 1909 to 1924. He will present two clinical lectures on subjects relating to endocrinology.

Dr. John H. Musser, of New Orleans, professor of medicine at Tulane University, president-elect of the American College of Physicians, will give a clinical address on some subject in internal medicine. Dr. Musser has had a distinguished career; with a B. S. degree from the University of Pennsylvania, he took his medical degree from the same school in 1908; after serving as assistant professor of medicine at his alma mater from 1919 to 1924, during which time he was also editor of the American Journal of Medical Sciences, he accepted the chair of medicine at Tulane University in 1925, where he has been since.

Dr. Karl A. Meninger, of Topeka, Kans., is so well known through the southwest that he is almost one of us. Since his graduation from Harvard Medical School in 1917, he has given his attention to neuro-psychiatry. As a teacher and lecturer Dr. Meninger always attracts, and those who have once heard him will go far to hear him again.

Dr. Leonard Freeman, of Denver, professor of surgery at the University of Colorado Medical School, one of the eminent teachers of surgery in the west, will give an address on some surgical subject.

Dr. James W. Kennedy, of Philadelphia, one of the leading surgeons of that city, will give a clinical talk. Dr. Kennedy, a graduate of Jefferson Medical College in 1899, is surgeon in charge of Joseph Price Hospital, gynecologist to the Coatesville Hospital, gynecologist and obstetrician to the Philadelphia Dispensary.

Dr. J. Arthur Myers, of Minneapolis, will present a paper on some phase of internal medicine. Dr. Myers, with degrees of B. S. and M. S. from Ohio University, took his medical degree from the University of Minnesota in 1920. He was instructor in anatomy at the University of Missouri in 1913 and held a similar position with the University of Minnesota from 1914 to 1919; he was assistant professor of medicine at the University of Minnesota from 1920 to 1925, and was chief of staff of the Lymanhurst Hospital from 1921 to 1928; he has been chief of the tuberculosis service of the Minneapolis General Hospital from 1923 to 1928.

Dr. John W. Shuman, of Los Angeles, will present a paper on Lung Abscess, with clinic. Dr. Shuman, after graduation from the University of Pittsburgh in 1912, was located at Sioux City, Iowa, where he was senior attending physician at St. Vincent's and the Good Samaritan Hospitals from 1913 to 1922; he was professor of medicine at the University of Beirut in Syria 1922 and 1923. He is now senior attending physician for the Los Angeles General and Hollywood Hospitals.

ABSTRACTS FOR CURRENT LITERATURE

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association; for 1927; with the comments that have appeared in the Journal.

During the course of a year the Council examines a considerable number of agents which it cannot admit to New and Non-official Remedies. The reports of findings and studies upon the rejected substances are published in the Journal and this small volume is a collection of the reprinted articles. In certain instances there is found material here which was not of sufficient importance to occupy space in the Journal, but which is included here in order to make the reports complete.

In instances the reports are in the nature of preliminary findings and only subsequent examinations will place the remedies in question in New and Non-official Remedies or in the rejected class.

Ask the "Detail" men if their remedies are found in New and Non-official Remedies; if they are not found there the real reason will be found in this work and probably not in the explanation of the "detailer."

SYPHILIS: A Treatise on Etiology, Pathology, Symptomatology, Diagnosis, Prophylaxis and Treatment—by Henry H. Hazen, A.M., M.D., Professor of Dermatology and Syphilology, Medical Department of Georgetown University; Professor of Dermatology and Syphilology, Medical Department of Howard University; Member of American Dermatological Association; Visiting Dermatologist and Syphilologist to Georgetown University Hospital, Freedmen's Hospital; Author of "Diseases of the Skin", "Cancer of the Skin", etc.; Second Edition; with 165 illustrations including 16 Figures in color; St. Louis; C. V. Mosby Company; 1928; $10.00.

Monographs are the best type of books for scientific subjects. They become out of date, but the references to the literature always make them valuable reference works. This monograph is splendidly languaged, chaptered, paragraphed, and illustrated.

The paragraphs on Infection and Immunity, by Major Matthew A. Reasoner, U.S.A., in the chapter on Pathology is of exceptional interest and value.

The reviewer finds much in the book to commend and nothing of importance to criticise. It seems that the malaria treatment of paresis should deserve more than one short paragraph which is all that is devoted to the subject. This speaks, however, for the author's conservativeness.

There are occasional errors. For example on page 34 under viability, sixth line, we read: "Postmortem material containing organisms is infectious at the end of twenty-four hours." Substituting "up to" for "at the end of" would not only shorten the sentence but would give more accurately the intent of the sentence. Again on page 552, third paragraph, he says: "The graduate physician can receive an intensive course of efficient training in one of a half dozen hospitals." It is evident that the author means that the training can be received in any one of a half dozen hospitals.

Southwestern Medicine

Printed by THE A C TAYLOR PRINTING CO, Phoenix, Arizona
Published monthly for the Board of Managers of the four constituent societies.

Volume XII. SEPTEMBER, 1928 No. 9

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SOUTHWESTERN MEETING IN ALBUQUERQUE

Owing to hotel conditions in Albuquerque, it has been found neessary to change the dates of the Medical & Surgical Association of the Southwest meeting to November 8, 9 and 10.

Detailed announucement about special features of the program will be found elsewhere in this journal. Complete program may be looked for in our October journal, which will issue about October 15th.

This is the second time the Association has gone to Albuquerque, and the Bernalillo County Medical Society is preparing for a banner meeting, and cordially invites every doctor in the Southwest, with wives and families, to attend. The beautiful new hotel which will be our headquarters, offers a very attractive setting for our meetings. Built in pueblo style, it is one of the showplaces of the Southwest.

Albuquerque has several excellent hospitals and sanitaria available for clinics. Several of our noted visitors will hold teaching clinics, and this should prove a very attractive meeting.

DR. CHARLES A. PETERSON

(By Dr. W. V. Whitmore)

The Pima County Medical Society is now called upon to mourn the death of Doctor Peterson. Last winter, about a month after we learned that Doctor Butler was afflicted with a malignant disease—before we had forced ourselves to accept that—we were cast into deeper gloom by the fact that Doctir Peterson had a similar trouble. In the case of Doctor Peterson the initial lesion was quite circumscribed and its prompt and apparently complete removal gave hope that the lesion had not seriously invaded the general system and that thus his life might be spared. While both doctors received treatment from some of the leading experts in the country, it did not avail.

Dr. Peterson came to Tucson shortly after his discharge from the World War. He promptly acquired an extensive and appreciative clientele and soon became recognized as very successful. Later, he became the most popular and efficient obstetrician Tucson has ever had. His work in this line soon occupied practically all his time, leaving none for general practice.

He possessed excellent personal qualities—was pleasant, kind, considerate, always good natured and had a good word for everyone, he was always sincere, square and to be depended upon. Naturally the members of the society appreciated such qualities and were all his friends.

Outside the profession these same qualities secured for him numerous friends. I doubt if any member of the profession here has ever had a larger number of real genuine friends—from all walks of life.

But above professional popularity and success—above these personal qualities, admirable as they were, were his high ideals, his upright life and his Christian character. His domestic relations were ideal. He was a devoted husband and a kind and indulgent father. He felt most keenly the loss of his eldest son as a result of experience in the war. (Another son lost his health from the same cause.) Surely this family did its "bit" for the country.

He was a loyal and valuable citizen, courting no publicity, he supported every measure for the improvement of the community.

No member of this society had to apologize for any act of Dr. Peterson's. In fact, the society has never had a member more worthy to serve as an example to others—particularly the younger men. Dr. Peterson will long be remembered because of his excellent qualities.

PERSONAL LIBERTY AND PUBLIC HEALTH IN NEW MEXICO

Our sympathies are entirely with Dr. Luckett, head of the Bureau of Public Health of New Mexico, in his determined efforts to secure compliance with the vital statistics requirements of that state. In a personal communication, Dr. Luckett states that our news item of last month to the effect that some of the New Mexico doctors might have an opportunity to see the inside of a jail on account of their derelictions, is being quoted in that state to his embarrassment. We are perfectly willing to admit that the statement about the jail was fathered by our own wish that such might be the case.

Too long have New Mexcio doctors and Arizona doctors, and doctors elsewhere, taken refuge in the lackadaisical good-nature of the officials entrusted with the care of the public health. The idea that a doctor is at liberty, after securing a license to practice, to handle the sick who come under his care without due regard for the public welfare, is a false notion and if heavy fines or jail sentences are necessary to bring about a proper understanding of, and respect for the public health laws, then we say more power to the health official courageous enough to enforce these laws| No doctor is of sufficient importance in any community to justify the idea that HE is not bound by the health and vital statistics laws of the commonwealth. Simply because he does not see or appreciate the importance of registration of births and deaths is not sufficient reason for his neglect in complying with these laws. When a man cannot see he should be willing to be led by those who do see.

PERSONALS AND NEWS NOTES

DR. R. B. HOMAN, medical director of the Homan Sanatorium of El Paso, Texas, has given up his office in the First National Bank Building of that city, moving to the sanatorium, where he will do all his work in the future.

DR. J. H. WOOLEY, formerly of Sonora, Mex-

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ico, will be located in Tucson, Ariz., after September. He has been spending the summer months on the coast.

DR. W. M. RANDOLPH, for many years located in Cochise County, lately at Dos Cabezas, has returned to Virginia, his old home, and will be located at 406 Park St., Charlottesville, Va., in the future. The profession in Arizona will regret the loss of Dr. Randolph from their circles.

DR. L. A. W. BURTCH, of Phoenix, has taken postgraduate work in the eastern cities during August and September.

DR. FRED HOLMES, of Phoenix, who with Mrs. Holmes, spent the summer in postgraduate work in Eurape, has returned to his practice. Most of his work was taken in Vienna under Neumann, but some time was spent in other cities where the best work is done in chest diseases.

DR. HARLAN P. MILLS, of Phoenix, has returned to his work with the Pathological Laboratory, after a month spent in touring the national parks in the west, including Mesa Verde, Yellowstone, Zion, Bryce, Grand Canyon.

DR. E. L. CHRISTENSEN, of Miami, will spend the month of September in special study in eye, ear, nose and throat in the clinics of San Francisco and vicinity.

DR. RAY FERGUSON, of the White River Indian Reservation, was in Safford, Ariz., on business affairs during the latter part of August.

DR. E. S. GODFREY, Director of the Bureau of Communicable Diseases of the State of New York, formerly Superintendent of Health of Arizona, will direct the Section on Epidemiology for the 57th annual convention of the American Public Health Association, which will be held at the Stevens Hotel in Chicago, October 15th to 19th.

DR. FELIX P. MILLER, of El Paso, president of the Texas State Medical Association, entertained Dr. M. E. Taber and family, of Dallas, early in August. Dr. Taber came to western Texas bear hunting.

DR. CARL H. LUND, of Douglas, was confined to the Presbyterian Hospital in Chicago, for some time during August, undergonig examination and observation.

DR. O. H. OLIVER, formerly of McNary, Ariz., has moved to Douglas, Ariz., where he will engage in practice. His address is 800 Eleventh St.

DR. R. J. STROUD, of Tempe, Ariz., addressed the Hiram Club of Phoenix on August 15th, on the subject of "Present Day Necessities in Preventive Medicine."

THE ARIZONA STATE BOARD OF HEALTH has issued a set of regulatoins governing the sanitation of tourist camps. After inspection of the camps, approval of those which comply with the regulation is given. The regulations, when complied with, should go far toward preventing spread of disease from such gatherings.

The new VETERANS' BUREAU HOSPITAL in Tucson, Ariz., has been completed and the keys turned over to Medical Director Wm. McFaul. Formal opening of the hospital has been set for October 17th. The dedication services will be in charge of the American Legion of Tucson, and the program includes addresses from Gen. Frank Hines, director of the Veterans' Bureau, Gov. G. W. P. Hunt, Senators Henry F. Ashurst and Carl Hayden, Representative Lewis Douglas, Mayor Frank Cordis of Tucson, and others.

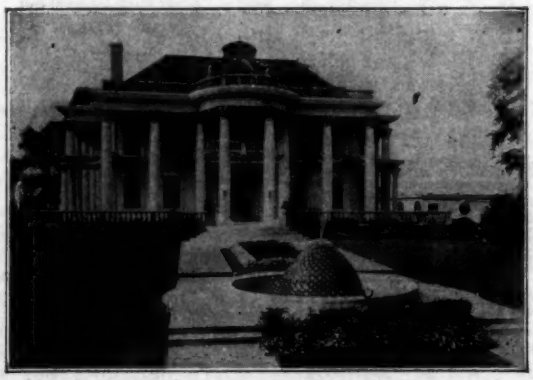
DR. WILLIAM DICK CUTTER, since 1923 dean of the New York Post-Graduate Medical School, has been appointed acting dean of the University of Southern California School of Medicine, which will open in September offering the first year of preclinical medicine.

Enrollment of first-year students in the newly-organized school has been limited to 54. More than 200 applications for admission have been received by the University authorities. From this number the 54 best-qualified applicants have been selected. Three years of pre-medical work in an approved college or university are required for admission.

The newly-appointed acting dean is a graduate of Yale University and the Medical School of Johns Hopkins University, from which he received his doctor's degree in 1905. He served his internship at the French Hospital, New York City, and then joined the hospital staff of the Copper Queen Mine, Bisbee, Ariz., where he was located from 1906 to 1910. The following year he became professor of physiology ond pharacology in the medical department of the University of Georgia, remaining there until 1919 when he became secretary of the Board of Medical Examiners of New York State. In 1923 he took up his work as dean of the New York Post-Graduate Medical School. He resigned that position to accept the headship of the newly-constituted school at the University of Southern California.

The new dean is a member of the American Association for the Advancement of Science, the American Medical Association, the New York Academy of Medicine, Phi Beta Kappa, and Sigma Xi.

DR. WILLIAM LOWE, who came to Arizona several months ago after eighteen years in industrial work in New Jersey, has been located for the past



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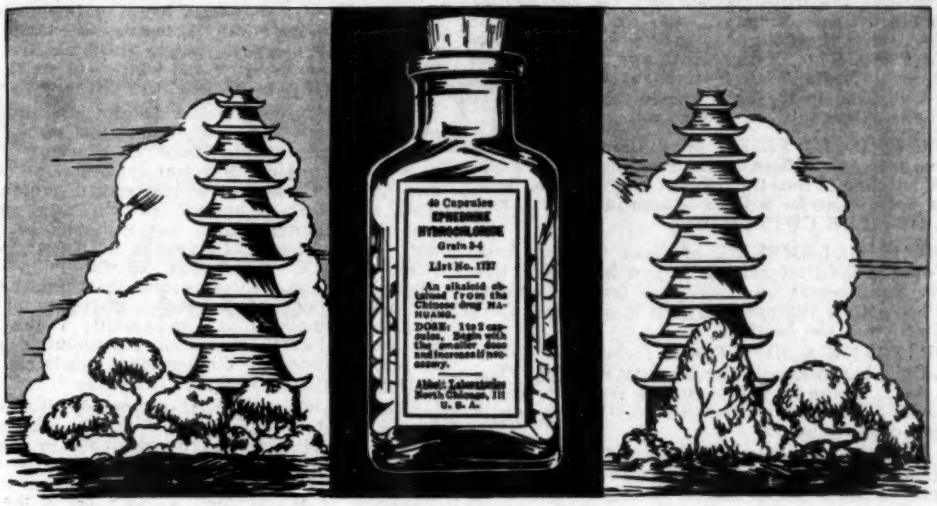

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six months at the Grand Canyon Bridge site, taking care of the industrial surgery for the Kansas Structural Steel company, who are erecting the bridge across the Colorado River seven miles below Lee's Ferry. This bridge will stand as one of the noteworthy engineering features of modern times, and will open up the little known regions north of the Grand Canyon to tourist travel.

DR. C. D. JEFFRIES, of Williams, Ariz., has moved into new offices on the first floor of the new hotel building. From the "News" of Williams, Ariz., it is noted that he will have associated with him, DR. ORVILLE CUTTEMUP.

DR. H. B. LEMBERG, of Casa Grande, Ariz., has opened the first unit of his new hospital in that town. The present unit will care for six patients, and has a fully equipped surgery. A graduate nurse will reside in the hospital.

DR. FRANK A. RUTLEDGE, formerly of Columbus, Ohio, has located in the Security Building, Phoenix, Ariz., where he will engage in practice. He announces a practice specializing in diseases of the bowels and rectum.

MEDICAL ARTS BUILDING IN EL PASO: The proposed medical building in El Paso, to accommodate doctors and dentists, seems to be assured. The proposed site is at the corner of Texas and Stanton streets. The building is being constructed by Mr. Bassett, president of the State National Bank, the architects being Trost & Trost. Dr. E. J. Cummins is acting as chairman of the committee of doctors to approve the general plan of the building.

DR. L. M. TOMPKINS, of Gilbert, Ariz., was a delegate to the American Legion convention in Miami, in August. Dr. Tompkins was formerly located in Miami, where his many friends were glad to greet him.

WHOOPING COUGH SEASON: Warnings are being issued by wide-awake health officials relative to whooping cough. This is one of the most dangerous diseases which afflict children, causing more than ten thousand deaths annually. It is usually thought lightly of by the public, and there is great need for education relative to the dangers of this infection and the best means to avoid it.

ASK ME ANOTHER QUESTION

(Neurology)

Neurology is admittedly a difficult subject, but is one which every clinician should know something about. These ten questions (copied from a small advertising pamphlet called "The Clinicist"), look easy, but the doctor who can obtain a passing mark on them is a good neurologist. Try it out on yourself.

1. What is the Babinski sign?
2. Paralysis of which nerve causes wrist-drop?
3. What is the Brown-Sequard syndrome?
4. What mental disease is characterized in its beginning by great emotional indifference?
5. What is the most important sign of brain tumor?
6. When the patient understands spoken and written language but cannot speak or write, what is his condition called?
7. What is the most common cause of multiple neuritis?
8. In what disease do the hands lose sensation for pain, heat and cold, although the other senses are preserved?
9. In hemiplegia what is the condition of the tendon reflexes?
10. What is the specific treatment for epidemic meningitis?

BOOK REVIEWS

ASTHMA—Its Diagnosis and Treatment—by William S. Thomas, M. D., Associate Attending Physician in Immunology, St. Luke's Hospital, New York; 20 illustrations in black and white and six in color. Paul B. Hoeber, Inc., New York; 1928; $7.50.

There are 20 chapters as follows: Definition and use of the term "asthma"; nature and causes; pathology; outline of procedure in handling a case; case history taking; physical examination—methods and findings; palliative treatment; protein skin tests and their technique; protein skin reactions and their interpretation; some details of testing and treatment—proteins used; air-borne proteins; food proteins; autogenous vaccine skin tests—their technique—reactions and interpretation; pollen asthma and its diagnosis; treatment of pollen asthma; complications; non-specific radical methods of treatment; causes of disappointing results. It also contains a bibliography consisting of 14 pages.

The table of contents, as presented, gives a fairly complete conception of the book. The author has had an exceptionally large experience in the treatment of asthma. He has 325 references to the literature which are the more important recent contributions to the subject.

The reviewer finds little to criticize either in the subject matter, or English. There are a few typographical and other minor errors.

On page 35, the 5th line from the top, the word multiple is used where it should be multiply. On

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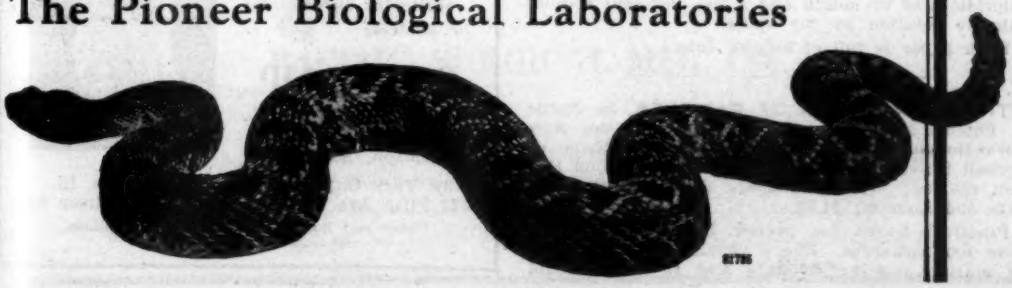

page 64, top line, the word "or" is used where "to" is evidently meant; also on page 98, in the fourth line from the bottom, the author uses "or" where "to" would give a better meaning. On page 93, in the first paragraph towards the end, he says "4/10 of one per cent solution of sodium hydroxide may be weakened to one per cent." It is evident that he means 1/10 of one per cent. In the seventh line of the second paragraph, page 114, the word "some" adds nothing to the strength of the sentence. Page 152, in the fourth paragraph the third sentence, he says "we subjected all of our patients to an examination", where he means that they subjected all of the patients to physical examinations; plural should have been used instead of singular. Page 155, in the last word of the first paragraph, "discovered" has an "l" in place of an "i." On page 215, in the fourth line from the bottom, there is a word "warranted" where it would appear that "unwarranted" is the word intended.

On page 136, is given the substitutes for bread; I would suggest lima-bean flour from which bread can be made.

On page 29, the author says that angioneurotic-edema may occur in the bronchial mucous membrane, but thinks it has not been substantiated. Frudenthal in 1912, observed a tremendous swelling of the trachea and bronchi during an attack of asth-Ephraim, Adams, Stork, Glasgow, Nowotony, Keiper, Heilskoy and Mahler, and Moeler.

The author has prepared an excellent monograph which may be safely used as a guide for the handling of asthmatic cases. It is the best which has come to the attention of the reviewer and conforms remarkably closely to the reviewer's experiences.

The book is to be commended as timely, thoroughly rational, and in line with modern advances on the subject. It is unequivocally recommended.

THE SURGICAL CLINICS OF NORTH AMERICA; June, 1928; Volume eight, Number three; Chicago Number; W. B. Saunders Company, Philadelphia and London; Paper $12.00 and Cloth $16.00 per clinic year.

The June issue has 219 pages, 49 illustrations, 20 contributors, and 31 separate reports. The more important subjects discussed are: Intussusception, anorectal disease, ventral hernia-fascia transplant, walking splint for delayed union and non-union of fracture of tibia and both bones of the leg, differential diagnosis of carcinomatosis and tuberculous peritonitis by means of the cystoscope, abscess of omentum, gastro-enterostomy disease, and alkalosis.

The importance of alkalosis especially as a post-operative complication is stressed. In the patient in question a gastroenterstomy had been done by a tumor mass which obstructed the pylorus. The surgeon reflects that a second operation for removal of the obstruction, had it been thought of in time, would likely have saved the patient. He outlines the treatment consisting chiefly of hydrochloridic acid by mouth and a five per cent sodium chloride solution by the veins.

Each paper is full of helpful data.

THE EXAMINATION OF PATIENTS, by Nellie B. Foster, M.D., Associate Physician to the New York Hospital; Associate Professor of Medicine at Cornell University College of Medicine; Second Edition revised; W. B. Saunders Company, Philadelphia and London; $4.50.

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profit by a frequent perusal of this book by Foster. It has but 392 pages and is only about one inch thick. It is a succinct, brief, encyclopedia of diagnosis. It is highly recommended by the reviewer.

UTERINE MALIGNANCIES:—This paper reports observations of the technic of management of uterine malignancies at the Radium Institute in Paris. The therapeutic indications at this Institute are as follows: (1) Cancers deemed best for surgery but not absolutely confined to surgery are, (a) adenocarcinoma of the cervix; (b) cancers coincident with adnexal infection; (c) cancers persisting after the failure of a preceding radium therapy; (d) cancers coincident with vaginal malformation of certain types. (2) All other operable cases in good condition are treated by utero-vaginal radium therapy in preference to hysterectomy. (3) Hysterectomy after radium therapy is recommended only in cases which were operable before radium treatment. (4) Hysterectomy followed by radium therapy is not recommended except in those rare instances where malformations or occlusions of the vagina and uterus exist. (5) Roentgen therapy alone or external radium at a distance is the method of choice in inoperable cases, where the condition of uterus and vagina does not permit correct radium usage; this is necessary in recurrence following hysterectomy. (6) The association of x-rays or radium at a distance with radium applied utero-vaginally is the correct method when the parametrium is invaded.

In using x-rays in conjunction with radium, it is considered important that the x-ray treatment be given prior to the radium applications. X-rays given following radium is much more ineffilcient.

The technic of Regaud of extending the period of internal treatment with radium over a period of six or ten days is described, the reason for this being that long irradiation or repeated doses during a certain time, will destroy the dividing cancer cells successively. The usual dose of internally applied radium is 50 "millicuries destroyed" which is equivalent to 6650 milligram-hours although as much as 8000 milligram-hours may be administered by using six foci.

That radiotherapy is not to be undertaken lightly is illustrated by the contraindications which are: (a) a state of radio-resistance following a seres of previous treatments; (b) the existence of a local or general infectious state not possible to ge suppressed; (c) cachexia caused by anemia following repeated hemorrhages or uremia from compression of ureters; (d) concomitant grave, chronic or acute affections, such as diabetes, Bright's disease, cirrhosis of the liver, cardiopathy, pulmonary tuberculosis; (e) generalization of the cancer to peritoneum, etc. (Several of these are used by surgeons as indications for advising radium.)

THE MANAGEMENT OF UTERINE MALIGNANCIES AT THE RADIUM INSTITUTE OF THE UNIVERSITY OF PARIS. George T. Pack, B. S., M. D., Tuscaloosa, Ala. Sou. Med. Jour., July 1928. p. 505.

PHYSICAL AND X-RAY EXAMINATIONS OF THE CHEST:—After discussing the proper relation and relative values of the physical examination and the x-ray examination of the chest this author enters into more detailed discussion of the reasons for errors in many roentgenographic interpretations. The summary of his conclusions is as follows:

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A GENERAL ELECTRIC ORGANIZATION

1. The findings on physical and roentgen ray examination of the lungs show some variation in nearly all instances, and in a small percentage the differences are very marked.

2. The ability of the disease process in the lung to produce shadows depends upon the power of the various elements making up the structures to intercept the rays, and this varies approximately according to the fourth power of the atomic number of their composing elements. Therefore, on the plate, small lesions may show perfectly if composed of elements whose atomic number is high, and large ones may not show at all if the atomic number of the chief component elements is low.

3. Lesions nearest the plate, (taken at a distance of 40 inches) show best, because the tissues nearest the tube are overpenetrated and consequently fail to intercept the rays and produce shadow. Therefore, there is considerable variation in plates taken antero-posteriorly compared with those taken posteroanteriorly. If a small lesion lies near the surface of the chest wall nearest the tube, it may not be detected at all by the roentgen ray. This error is lessened, but not eliminated, if the tube is some distance from the patient.

4. When small lesions are suspected on physical examination, the patient should be placed dorsoventrally if the lesion is suspected anteriorly, and ventrodorsally when suspected posteriorly, or, what is better, plates should be taken in both directions.

Certain Factors Militating Against Accurate Correlation of Physical and Roentgen Ray Examinations of the Chest. By F. M. Pottenger, M. D., Monrovia, Calif., Am. Jour. Med. Sci., May, 1928, p. 676.

PHLEBOLITHS:—Only since the advent of x-rays have phleboliths become of clinical interest. That phleboliths cast shadows was proven in 1908 by Clark and Orton, working independently. The presence of phleboliths indicate varicosity of veins, and since varicosities cause pain in the legs, testes and in the pelvis of women when ovarian veins are involved, it is reasonable to suppose that they will cause pain in other localities. The paper is directed chiefly toward the significance of the well known phlebolith shadows in the pelvis. Report by Culligan of the Mayo Clinic is quoted where in 1555 consecutive roentgenograms of the pelvis, 39 per cent showed phleboliths. The report of these authors is based on pelvic films and clinical histories of 900 patients examined at the Stanford University Medical School, of whom 31.7 per cent showed phleboliths. Special interest attaches to fifteen patients, twelve males and three females, in whom the varicosities as evidenced by phleboliths in the pelvis, was the only ascertainable explanation for pain in the lower quadrants. They concludes that these varicosities have a definite clinical significance, which has been largely ignored in the past.

Phleboliths. James R. Dillon, M. D., and Bernard A. Cody, M. D., San Francisco, Division of Urology, Stanford Univ. Med. Sch., Calif. & West. Med., June, 1928, p. 800.

GORGAS MEMORIAL

With special programs arranged in various parts of the United States as well as in foreign countries, the Gorgas Memorial headquarters here announce anniversary plans for October 3, the birthday of Dr. William Crawford Gorgas. The fight of Gorgas against yellow fever and malaria and his administrative genius as surgeon general of the army during the World War, as well as his famed work in the field of sanitation are to be stressed in these meetings. Thirty-three health corps of the Memorial will participate.

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Of particular importance in this year's citation of the various efforts of the Memorial to honor the name of Gorgas is the statement that "one of the leading scientists in the field of tropical medicine" will soon be chosen by the Scientific Board of the organization, to take charge of the laboratory in Panama. This laboratory is made possible by an annual appropriation of the United States government of $50,000, which is to be supplemented by grants from some twenty-one South and Central American countries.

Panama has given over the use of a magnificent edifice recently erected for a proposed school of medicine to the Memorial, and it is predicted by Memorial officials the research campaign will be under way by November first in these quarters.

The development of the Memorial activities in the field of research will not interfere with the health educational campaign throughout the country, it is stated. The present plan of sending out caravan speakers to the various communities stressing the periodic examination and urging more public support for scientific medicine, will be continued. In the past few weeks these speakers have appeared before 156 groups in the middle-west, have reached millions through the radio, have exhibited health films to 42 associations, with an audience of 24,843, and have added in their trip seventeen daily newspapers to the list for Gorgas health material.

RENAL TUMORS:—The clinical differentiation of different types of tumors is frequently possible by urography, supplemented by clinical and cystoscopic data. Renal neoplasms may be divided into two groups; (1) cortical tumors (hypernephroma, carcinoma, sarcoma, papillary cystadenoma, adenoma and lipoma); (2) renal pelvic tumors (epithelioma, papilloma, leukoplakia).

The pyelogram in cases of hypernephroma or adecarcinoma usually show elongation of the calyces; the major calyces may be constricted and flattened throughout, and the minor calyces may be tapering, often hook-like; usually only one or two of the major calyces are involved. In cases of alveolar carcinoma, the growth is likely to involve the pelvic wall, causing abbreviation and irregular dilatation of calyces, instead of elongation and narrowing. In cases of difficulty in differentiating hypernephroma from polycystic kidney, a pyelogram of the other kidney should be made, as polycystic disease will show bilateral deformity. The benign tumors of the kidney do not show the common deformities of hypernephroma; there may be evidence of compression, with constriction and flattening of the pelvis with abbreviation of the calyces. Large solitary cysts usually cause a deformity which consists in abbreviation of adjacent calyces, compression and flattening of the adjacent portion of the pelvis, and change in position and axis of the kidney.

Cicatricial changes from chronic pyelonephritis may be difficult to differentiate from the deformities of tumor. Likewise it is often difficult to differentiate intrarenal and extrarenal tumors; displacement of the kidney pelvis in the pyelogram is of little significance, as it may occur in either; the pelvic deformity of intrarenal tumor is of more value.

Differentiation of the type of tumor, when possible, has great clinical value in treatment and prognosis.

DIFFERENTIAL DIAGNOSIS OF RENAL TUMORS. William F. Braasch, M. D., Section on Urology, Mayo Clinic, Rochester, Minn. Sou. Med. Jour., June, 1928, p. 425.

SMALL DOSES EFFECTIVE

When we say that one ten-thousandth part of a grain of Adrenalin is sufficient to produce a physiological effect when administered to an adult, we are in the region of the infinitesimal. Adrenalin as used in medicine is never more than one-thousandth of the strengt hof the original; the best known commercial product is Adrenalin Chloride Solution 1:1000; ampoules are offered containing solutions of 1:2600 and 1:10,000; and for certain uses the strength may be not more than 1 to 100,000.

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